Toddler Offspring of Women with Eating Disorders: A Controlled - Observational Study

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CONTENTS

PAGE

CONTENTS (continued)

CONTENTS (continued)

LIST OF TABLES

TABLE PAGE

LIST OF TABLES (continued)

TABLE PAGE

LIST OF FIGURES

FIGURE PAGE

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ABSTRACT

Research into the effects of an eating disorder on a mother's parenting abilities and her children's development, can provide an understanding of the familial risk factors for developing an eating disorder. Ten mothers with an eating disorder and their toddler offspring, and ten control mothers and their toddlers participated in the current study. Aspects of the toddler's development and his or her temperament were examined, the mother and toddler were observed during a lunchtime, and the toddler's diet was analysed. The mothers completed rating scales examining their attitudes towards nutrition, and their satisfaction with their child's appearance. The results indicated that, when compared to the controls, the case toddlers were lighter and shorter at birth; consumed less thiamin and sodium; and tended to have 'easier' temperaments. The case mothers made fewer references to food and eating during the lunchtime, and tended to be more negative, give more instructions, and to interact less with their children; and they were less likely to have breast fed their child. The differences found within this small sample are suggestive of many fruitful areas for further research and recommendations are made within each area studied.

1.0. INTRODUCTION

The eating disorders anorexia nervosa and bulimia nervosa have emerged as significant mental health problems in the last few decades. The syndrome of bulimia nervosa (BN) [American Psychiatric Association, Diagnostic and statistical manual of mental disorders (4th ed.) (DSM-IV), 1994] is characterised by recurrent episodes of binge eating, during which the individual experiences a lack of control, followed by purging behaviours such as self-induced vomiting, laxative use or excessive exercise. The self evaluation of an individual with bulimia nervosa is also unduly influenced by shape and weight. Anorexia nervosa (AN) (DSM-IV, 1994) is marked by a refusal to maintain body weight above that considered minimally normal for age and height, amenorrhea, and an intense fear of gaining weight or becoming fat, coupled with a disturbance in how they view their body weight and shape. Anorexia nervosa is further divided into restricting type (RAN) and the binge-eating type/purging type (BAN) according to whether or not the individual engages in binge-eating or purging behaviours (DSM-IV, 1994). Both disorders are significantly more common in females, with the prevalence in males being about one tenth of that in females (Bulik, 1994). The Christchurch Psychiatric Epidemiological study estimated the lifetime prevalence rates of bulimia nervosa in women at 2.1%, and of anorexia nervosa at 0.3% (Wells, Bushnell, Hornblow, Joyce, & Oakley-Browne, 1989).

There are many etiological theories on the eating disorders (see Szmukler, Dare, & Treasure, 1995, for a recent and comprehensive review) and most include a discussion of the role of the family. The family may influence an individuals risk of developing an eating disorder in a number of ways. Through genes, temperament and psychopathology for instance; through its role in the transmission of social pressure on young women to be thin; and through the way in which families relate and interact. The research concerning the role families play shall be reviewed here.

The children of women with an eating disorder provide a valuable insight into the etiology of eating disorders. They may receive many of the biological and genetic risk factors of their mothers, and may be at risk as a result of their mothers' parenting style, perhaps influenced by her eating disorder and the way in which she herself was parented. There is limited literature looking at the children of mothers with an eating disorder. What is available is mainly description of the child's growth and physical development in infancy, and the mothers self-reported concerns with her parenting. Consequently the following research represents one of only a few comparison studies completed to date looking at women with a history of an eating disorder and their children.

1.1. FAMILIAL RISK FACTORS

1.1.1. Genetic Factors

Twin Studies

While the prevalence of eating disorders is almost certainly influenced by a common environmental pathogenesis, there is increasing evidence that a genetic component may also be present. Reviews of anorexia nervosa genetic data report that between 44% and 55% of monozygotic (MZ) twins have been found to be concordant for AN (Attie, Brooks-Gunn, & Peterson, 1990; Treasure & Holland, 1995) and about 7% of dyzygotic (DZ) twins were concordant (Treasure & Holland, 1995). As yet however, no studies have been published on twins reared apart. In terms of bulimia nervosa the largest study is that of Kendler, MacLean, Neale, Kessler, Heath and Eaves (1991), who found a proband concordance of 23% for MZ twins and 9% for DZ twins. Overall, Treasure and Holland (1995) concluded that the larger discrepancy between the proportion of MZ twins as opposed to DZ twins in AN compared to BN suggests that genetic factors are of more relevance to the etiology of AN than of BN.

Eating Pathology

There is considerable evidence that the families of women with eating disorders have rates of eating disorder and eating pathology considerably higher than those of the general population (Eisler, 1995; Kog & Vandereycken, 1989; Rodin, et al., 1990; Strober & Humphrey, 1987). For instance, Gershon (1983, in Strober, et al., 1985) found that the combined rate of AN and BN was six times higher in first-degree relatives of individuals with anorexia than in the relatives of controls. Similarly Gershon, Schreiber, Hamovit, Dibble, Kaye, Nurnberger, et al. (1984) found the lifetime risk for eating disorders was 6% in the relatives of patients with AN in comparison to a rate of only 1% in the relatives of controls. Strober, et al. (1985) found either a definite or probable eating disorder in at least one first or second-degree relative in 27% of patients with AN, in comparison to a rate of 6% in psychiatric controls.

The prevalence of AN among non-twin sisters ranges from 3 to 10% which is considerably greater than the 1% prevalence rate found in the community (Scott, 1986). In a retrospective study Kalucy, Crisp, and Harding (1977) found a history of significantly low weight, anorexia nervosa, or weight phobias in 27% of mothers and 16% of fathers. AN and BN are also significantly linked. Walters and Kendler (1995) found in their study of female twins that even when the possibility of a women with AN having a twin with BN was statistically controlled for, the twin of a women with AN was still 2.6 times more likely to have BN than the twin of a women without AN. This suggests a common set of familial factors influencing the risk for both kinds of eating disorder.

Affective Disorders

Other genetic influences have also been proposed. One of the more common is the "affective disorder variant" hypothesis. This is based on the high incidence of concomitant depression found in women with eating disorders, and their first degree relatives. Bellodi, Pasquali, Diaferia, Sciuto, Bernardeschi, and Cocchi's (1992) review found the incidence of concomitant depression varied from 10-50% for restricting

anorexia nervosa patients, from 40-80% in bulimic anorexia nervosa, and from 25-70% for bulimia nervosa patients. A number of other reviews of the research literature have also found that the rates of affective disorder in the first degree relatives of eating disorder patients are considerably higher than rates in the normal population (Kog & Vandereycken, 1989; Rodin, Striegel-Moore, & Silberstein, 1990; Strober & Humphrey, 1987; Treasure & Holland, 1995). However the reverse is not also true, that is rates of eating disorders are not higher in the families of affective-disorder patients (Strober, et al., 1986, cited in Strober & Humphrey, 1987). Furthermore, rates of affective disorder among relatives of non depressed anorexics are no higher than rates in individuals in the general population (ibid.). Overall while eating and affective disorders are often comorbid, Strober and Humphrey (1987) concluded that they are transmitted along independent family lines.

Substance Use

There is also growing evidence for a link between substance use disorders and bulimia, both bulimic anorexia and bulimia nervosa. Strober et al. (1982, as cited in Strober & Humphrey, 1987) found a rate of alcoholism in the first-degree relatives of BAN patients four times that of the relatives of RAN patients. Others have also reported a high prevalence of alcoholism in the first degree relatives of both BAN and RAN women (Bulik, 1987; Herzog, 1982; Pran, Kennedy, Garfinkel, & Owens, 1985).

Family Obesity

A strong finding for bulimic eating disordered individuals (BAN and BN), is a greater incidence of obesity in their parents (particularly mothers), and first degree relatives, than among the relatives of controls or restricting anorexics (Kog & Vandereycken, 1989; Rodin, et al., 1990; Strober, Morrell, Burroughs, Salkin, & Jacobs, 1985; Yates, 1992). This could in part be due to the reduced resting metabolic rate often found in bulimic patients (Altemus, Hetherington, Flood, Licino, Nelson, Bernat, et al., 1991; Delvin, Walsh, Kral, Heymsfield, Pi-Sunyer, & Dantzic, 1990; Obarzanek, Lesem, Goldstein, & Jimerson, 1991). As a result of a low resting metabolic

rate bulimic individuals may gain weight more easily, which may in turn contribute to the preoccupation with body weight, leading to dieting and behaviours (such as the binge-purge cycle) that raise the resting metabolic rate. Stunkard et al.s' (1988 in Yates, 1992) adoption study also found a link between the weights of mothers and their biological daughters adopted away, which also suggests a genetic link.

1.1.2. Demographic Variables

A number of family demographic variables have been proposed as possible risk factors for eating disorders. These include higher social class, patient birth order (with first and last children thought to be at greater risk), higher parental age at the patients birth, family size and family composition. However the results from a variety of studies, reviewed elsewhere (Eisler, 1995; Kendler, et al., 1991; Kog & Vandereycken, 1989; Rodin, et al., 1990; Weiss & Ebert, 1983), prove to be inconsistent. Results are often conflicting, appear non-specific to eating disorders as opposed to other psychiatric conditions, or not as influential as first thought. Eisler (1995) concluded that "...while the sociodemographic features of the families of eating disordered patients show some differences from the normal population, these are probably smaller and less consistent than was thought previously" (p.157).

1.1.3. Life Events and Stress

Many etiological accounts of eating disorders also report higher rates of adverse events in the family. Rosen, Compas and Tacy (1993) note that stressful daily and major life events are related prospectively to psychological and behavioural problems in adolescents - the population most at risk of eating disorders. Stress is thought to be implicated in eating disorders due to it's role in normal appetite regulation, and because it can exacerbate body image problems and lead to maladaptive coping mechanisms such as binge eating (Cattanach & Rodin, 1988; Miller, 1988; Shatford & Evans, 1986; Strober, 1982; and Humphries & Miller, 1988).

Schmidt, Hodes and Treasure (1992) found that a group of early onset bulimia nervosa patients experienced more 'cultural stress' than the late onset group. Most studies agree that parental loss through death or parental separation does not appear to be a risk factor for developing an eating disorder (Dolan, Lieberman, Evans, & Lacey, 1990; Kendler, Neale, Kessler, Health, & Eaves, 1992; Rastam & Gillberg, 1991b). More recently however, Schmidt, Tiller and Treasure (1993) found that although the death of a parent was rare, a number of bulimic patients did experience some form of parental loss prompted by events such as being sent to boarding school or parental separation. Furthermore, about 65% of the bulimic group in their sample had experienced two or more types of childhood adversity, a rate greater than that for the anorexic group. Rastam and Gillberg's (1992) large population study found significantly more cases of loss of first-degree relative in adolescents with AN than in control girls, and significantly more major life events in three months preceding the onset of their eating disorder.

High rates of sexual abuse have also been reported in women with eating disorders. In his recent review of this literature Eisler (1995) reported that although overall reports of sexual abuse are higher in women with eating disorders (particularly bulimia) than the general population, rates are not higher than in other psychiatric groups. While not well researched, rates of physical abuse also appear higher in women with bulimia nervosa than in the general population (Piran, Lerner, Garfinkel, Kennedy, & Brouilette, 1988; Schmidt, et al., 1993), although this does not seem to be the case for women with anorexia nervosa (Schmidt, et al., 1993). Rorty and Yager (1993, p.207) concluded that while abuse may not directly 'cause' an eating disorder, "both the immediate trauma and the negative developmental consequences of childhood abuse provide setting conditions for numerous psychopathological conditions, including eating disturbance".

Overall, while the evidence is not as compelling for anorexia nervosa, there does appear to be some evidence that women with bulimia do experience somewhat more stressful life events than do the general population. However Rosen, et al. (1993) do

suggest that much of this stress can be seen to be a consequence of eating disordered symptoms rather than vice versa.

1.1.4. Temperament

The role of the family

One factor that may place an individual at risk of developing an eating disorder is temperament. What exactly temperament is has been discussed elsewhere (Hubert, Wachs, Peters-Martin, & Gandour, 1982; Prior, 1992; Seifer & Sameroff, 1986), essentially however it can be described as the characteristic style of an individual's emotional and behavioral responses in a variety of situations, which provides the basis for his or her personality. Most definitions of temperament agree that it is essentially an internal characteristic of the individual, dependent (to a greater or lesser degree according to the particular theory) on perinatal stress, postnatal nutrition, toxins, illnesses, CNS trauma and especially on genetic factors. However the 'innate' temperament of a child is almost impossible to measure - given the constant interaction of a child and caregivers from birth - without also measuring aspects of the child's environment, particularly the rearing influences of the child's family. Hence while temperament in its purest sense is influenced only by biological and genetic aspects of the family, the way it is measured invariably involves the family environment, particularly the caregiver-child relationship.

An important theory in the field of temperament is that developed by the New York Longitudinal Study (NYLS) group of Thomas, Chess and their colleagues (Thomas & Chess, 1977; Thomas, Chess, & Birch, 1968; Thomas, Chess, Birch, Hertzig, & Korn, 1963). Thomas and Chess argue for a transactional or biosocial model of temperament, in which temperament while primarily biological in origin, is constantly interacting with the environment. As it is modified by the environment a lesser degree of continuity and stability is expected. There are three basic components to Thomas and Chess's model of temperament (in Seifer & Sameroff, 1986): firstly, that children make a major contribution to their own development; secondly, that there is a dynamic interaction

between child constitution and parent behaviour; and finally that the 'goodness-of-fit' between these two systems will determine the success of the developmental outcomes.

The role of temperament in eating disorders

Rutter (1987) noted that temperamental differences have implications for later development and for psychiatric risk. According to Prior (1992), the relationship between temperament and psychiatric disorders often occurs through the effect on the mother-child or caretaker-child interaction. Longitudinal population data from the Australian Temperament Project (Kyrios & Prior, 1990; Prior, Sanson, & Oberklaid, 1989) has demonstrated consistent relationships between temperamental difficulty and externalising, internalising and total behavior problems at every age between two and eight years. Similarly Kashani, Ezpeleta, Dandoy, Doi and Reid (1991) found that the child's temperament traits and the parent's attitude toward the child were predictors of psychopathology in the child.

The relationship between temperament and eating pathology in children has been examined by Carey (1985). He found a significant link between a 'difficult' temperament (using the NYLS temperamental categories) in children, especially a more difficult mood, and rapid weight-for-length gain between 6 and 12 months. He hypothesised that this could be a result of temperamentally difficult infants being fed more in an effort to soothe them. Similarly, in middle childhood Carey, Hegvik and McDevitt (1988) found a moderately significant relationship between a rapid weight gain, obesity and more 'difficult' temperaments. In particular, he found that obese children were less predictable, less persistent, and more approaching. The results of this longitudinal study (Carey, 1985; Carey, Hegvik, & McDevitt, 1988) found that the temperamental traits of withdrawing, low adaptability, and high intensity were all predictive of a rapid weight gain.

No longitudinal prospective studies have been done examining temperament and the eating disorders, all research having been completed with adult, or adolescent sufferers of

eating disorders. A common problem within the literature is that once an individual reaches maturity, temperament traits become an intrinsic part of personality and are difficult to determine separate from personality. Hence much of the research refers to "temperament" and "personality" in this older group somewhat interchangeably. In recent discussions of the research examining personality dimensions in women with eating disorders, women with AN have been described as 'over controlled', 'rigid', 'obsessional' and 'perfectionistic'; and those with BN have been characterised as 'impulsive', 'disorganised', and demonstrating 'affective lability' (Bulik, Sullivan, Weltzin, & Kaye, 1995; Casper, Hedeker, & McClough, 1992; Steiger, Puentes-Neuman, & Leung, 1991; Wonderlich, 1992).

A small number of studies have looked specifically at temperament in women with eating disorders, and these have used Cloninger's (1987) Tridimensional Personality Questionnaire (TPQ). There are three main independent temperamental dimensions within Cloninger's (1987) theory. Novelty seeking (NS), reflecting behavioral activation, is the tendency toward exhilaration and excitement in response to novel stimuli. Harm avoidance (HA), reflects behavioural inhibition and is the tendency to respond intensely to aversive stimuli and therefore inhibit behaviour in order to avoid punishment, novelty, or frustrative nonreward. Reward dependence (RD) reflects the maintenance of behaviour, particularly socially referenced behaviour, that has been previously rewarding.

Using the TPQ, Brewerton, Dorn and Bishop (1992), and Brewerton, Hand and Bishop (1993) found that all types of eating disorder patients scored higher on HA than controls, but only those with BN (with or without AN) had higher degrees of NS, especially impulsiveness. In a recent study of temperament and eating disorders Bulik, et al. (1995) examined the different temperament profiles of defined groups of women with AN, BN with no history of AN, and women with both AN and BN (AB), to determine if the differences in clinical symptoms reflected differences in temperament and personality. The AN group in this study showed higher scores on RD, BN women scored higher on

the NS subscale "extravagance" and higher than the AB women on the subscale of "exploratory excitability", while the AB women showed more HA than AN women, and had particularly high scores on the HA "shyness" subscale.

The authors concluded that these results reflect the clinical picture of the different diagnostic clusters: AN women as vulnerable to social pressures to be thin, and persisting with weight loss despite the costs of such thinness; the behavioural activation of BN women reflected in their inability to maintain a diet, the dramatic nature of bulimic symptomatology, and the impulsiveness often seen in these women in terms of other psychopathology such as excessive spending and shoplifting; and finally the social withdrawal and social anxiety often concomitant in women with severe forms of the disorder such as those with both AN and BN. Overall this study supports the notion that temperament may play a role not only as a risk factor for developing an eating disorder, but also a role in the symptomatology of the eating disorder itself.

1.1.5. The Family and the Socioculutral Milieu

No etiological theory of eating disorders is complete without reference to the social pressure on women to be thin. Westermeyer (1985) suggests that anorexia and bulimia are essentially culture-bound syndromes given their virtual absence in underdeveloped countries and their increasing prevalence as cultures adopt Western ideals. According to Brownell (1991) the percent of body fat now required for the 'aesthetic ideal' is almost half that of the normal level, and this standard is coupled with the widely held belief that the body is "infinitely malleable and with the right combination of diet and exercise every person can reach the ideal" (Brownell, 1991, p.4). Consequently dieting is becoming more the norm than the exception (Garner & Garfinkel, 1980). In a recent study of adolescent girls in Christchurch, Fear, Bulik and Sullivan (1996) found that 71% of students desired to be a smaller size, 54% were dieting to lose weight and most had begun to diet before the age of 13 years.

In a review of the literature Striegel-Moore, Silberstien and Rodin (1986) proposed that family members amplify the sociocultural importance of attractiveness, which for women is associated with thinness. They suggested that if mature female family members place emphasis on attractiveness and thinness, model weight preoccupation and dieting, and encourage attempts at weight loss, the younger female family members are more likely to diet and are at greater risk for the development of eating disorders. For instance Pike and Rodin (1991) found that in comparison to mothers of non-disordered eating daughters, mothers of daughters with disordered eating placed more pressure on their daughters to be thin, and were more critical of their daughters appearances than of their own. These differences remained even after controlling for current weight differences. Overall, a growing number of research studies suggest there is a strong relationship between a mother's preoccupation with thinness and her level of disturbed eating, and her daughter's eating and weight concerns (Attie, et al., 1990; Hill, Weaver, & Blundell, 1990; Levine, Smolak, & Hayden, 1994; Ruther & Richman, 1993; Striegel-Moore & Kearney-Cooke, 1994; Thelen & Cormier, 1995). Therefore it seems that the greater importance a mother places on the societal ideal of a thin body, the greater the likelihood that her children, particularly her daughters, will also value the ideal.

Mothers also have a role in the development of their children's body image. Evans and le Grange (1995) found a strong relationship between mothers' satisfaction with their own body shape and their child's degree of body satisfaction. This finding was especially true for mothers with an eating disorder, a finding not surprising given the association between eating disorders and body dissatisfaction (DSM-IV, 1994). Evans and le Grange point out, that this offers support for the contention that the type of attitude a mother holds of her child's body is likely to be communicated to the child and internalised as their own body image. Considerable research has indicated that body dissatisfaction is a crucial moderating variable between nonpathological dieting and clinical eating problems (Attie, et al., 1990; Polivy & Herman, 1987; Rosen, et al., 1993; Striegel-Moore, et al., 1986). It would therefore seem that the children of women with poor body image - such as those with an eating disorder - are at greater risk of developing

an eating disorder, particularly if the mother is dissatisfied with her child's body weight and level of attractiveness.

1.1.6. Family Relationships and Interaction Patterns

Most etiological formulations of the eating disorders include a description of disturbed family functioning, in terms of family relationships and interaction patterns. Two early and influential theories of anorexia were that of Bruch's (1973) and Minuchin, Rosman and Baker (1978). Bruch proposed a psychodynamic account of disturbed mother-child relationships; while (Minuchin, et al., 1978) developed a family systems account of the 'psychosomatic family' suggesting that families in which a member had an eating disorder were characterised by greater enmeshment, overprotectiveness, rigidity, and lack of conflict resolution. These theories were based primarily on clinical observations of families with an eating disordered member. Consequent empirical comparison studies have found theories such as these difficult to evaluate empirically and often conflicting results are found.

Most of the research examining the families of individuals with eating disorders has used self report questionnaires, primarily the Parental Bonding Instrument (PBI), the Family Environment Scale (FES), the Family Assessment Device (FAD) and the Family Cohesion and Adaptability Scales (FACES, and FACES II) (see Eisler, 1995, for a good description of these instruments). Reviews of this literature are provided elsewhere (Eisler, 1995; Kog & Vandereycken, 1989; Strober & Humphrey, 1987), and Table 1 presents a brief summary of some the more notable research findings.

Table 1

Summary of family interaction studies

Authors	Type of subject (n)	Measures	Significant findings
Questionnaire Studies:			
Garner, Garfinkel, & O'Shaughnessy (1985)	Clinical - RAN (32) - BAN (33) - BN (39)	FAD	Both BN and BN perceived more pathology in the family than RAN. BAN and BN showed pathologic scores on task accomplishment, role performance, communication, affective expression, affective involvement, control values and norms.
Waller, Calam, & Slade (1989)	Clinical and attendees at self-help groups) - AN (12) - BN/hist AN (21) - BN (8) Nonclinical controls (27)	FAD	ED women rated family as less 'healthy' than controls. AN and BN/hist AN rated family functioning as unhealthy in affective involvement and behaviour control, BN/hist AN also rated families as poor on problem solving. BN rated family interaction as poorer than controls on all scales except behaviour control.
McNamara & Loveman (1990)	Nonclinical - BN (31) - repeat dieters (61)\ - nondieters (59)	FAD	BN reported poorer general family functioning, more affective involvement, less affective responsiveness, poorer family communication, poorer problem-solving skills, and poorer behavioural control than both repeat and non-dieters.
Steiger, Puentes-Neuman, & Leung (1991)	Nonclinical (adolescent students) - RAN (14) - BAN (10) - BN (20) - Atypical ED (51) Asymptomatic controls (410)	FAD	BAN and BN both indicated greater family incohesion but the RAN group compared with controls
Waller, Slade, & Calam (1990)	Clinical - AN (12) - BN/Hist AN (21) - BN (8) Nonclinical controls (27)	FACES II	ED women perceived families as lower in adaptability (rigid) and cohesion (disengaged) than controls.
Rastam & Gillberg (1991)	Nonclinical (adolescents) - AN (51) - Controls (51)	FACES	AN did not differ from controls on any measures. Only one in five families evidenced emeshment, rigidity, and overprotectiveness, and this not exclusive to ED families.

Table 1 continues...

Table 1 (cont.)

Summary of family interaction studies

Authors	Type of subject (n)	Measures	Significant findings
Dare, Le Grange, Eisler, & Rutherford (1994)	Clinical (adolescents and families) - AN (18) - BN (8)	EE (Expressed Emotion) Scales FACES	EE in both families at low levels. Patients perceive families as not close and as highly structured. Both parents and children express a desire for greater closeness and flexibility in family functioning
Calam, Waller, Slade, & Newton (1989)	Clinical and women from self help groups - AN (31) - BN (33) - BN/History AN (34) Nonclinical controls (242)	PBI	ED group recalled mothers as less caring and fathers as less caring and more protective. BN/hist AN recalled only fathers as less caring, BN perceived both parents as less caring.
Rhodes & Kroger (1992)	Clinical (adolescent) - AN (4) - BN (9) - AN/BN (7) Nonclinical controls	PBI	ED group experienced maternal care as involving greater emotional coldness, indifference, and rejection than controls. ED group also reported greater levels of maternal overprotectiveness and affectionless control than did the Control group.
Kent & Clopton (1992)	Non Clinical (college) - BN (24) - SubBN (24) - controls (24)	FES PBI	BN only differed from Subclinical BN and Controls on the Expressiveness subscale of FES.
Strober (1981)	Clinical - RAN (22) - BAN (22)	FES	Found a more problematic family environment and a worse parent-daughter relationship in BAN than RAN
Johnson & Flach (1985)	Clinical - BN (105) Nonclinical controls (86)	FES	BN reported more conflict, less cohesion, less expressiveness, less intellectual-cultural, active recreational orientation, and moral-religious emphasis. They found that organisation and achievement were predictors for the severity of BN.
Leon, Lucas, Coligan, Ferdinande, & Kamp (1985)	Clinical (adolescents and parents) - AN 31 Nonclinical controls (37)	FES	No differences in AN perception of the family environment. The control parents rated family system as having greater cohesion and expressiveness than the AN parents; and the control mothers also viewed the family atmosphere as more accepting of independence than the AN mothers.

Table 1 continues...

Table 1 (cont.)

Summary of family interaction studies

Authors	Type of subject (n)	Measures	Significant findings
Kent & Clopton (1988)	Nonclinical: (college) - BN (26) - SubBN (15) - controls (35)	FES	Mulitvariate analysis revealed no differences between controls and ED's. Using univariate analysis, subclinical BN's differed from the controls on the Organisation Scale only
Stern, Dixon, Jones, Lake, Nemzer, & Sansone (1989)	Clinical(?) - RAN (20) - BAN (13) - BN (24) Nonclinical controls (57)	FES	ED families rate themselves as being less supportive of each other, less encouraging of the open expression of feelings, and more likely to have conflictual interactions than control families. BAN, BN < Controls: cohesion scale BAN, RAN, BN < Controls: Expressiveness subscale BN > Controls: Achievement orientation scale. RAN<Controls: Active recreational Orientation Scale.
Blouin, Zuro, & Blouin (1990)	Clinical BN (99) - depressed BN (61) - nondepressed BN (38) Nonclinical controls (37)	FES Diagnostic Interview Schedule (DIS)	Depressed BN perceived families as less cohesive, less encouraging of independent behaviour, less expressive, and less oriented toward recreational pursuits, and more oriented toward achievement and more controlling than Controls. However this only true for depressed BN. The non-depressed BN group could not be differentiated from the control group
Shisslak, McKeon, & Crago (1990)	Clinical - BN (24) - BAN (13) Nonclinical controls (41)	FES Family Dynamics Survey (FDS)	BN and BAN perceived their families as more dysfunctional than the controls on dimensions of cohesion, expressiveness, conflict, recreational orientation, emotional support, communication and need for counselling.
Thienemann & Steiner (1993)	Clinical (adolescents) - BAN, RAN, BN (118) Depressed controls (118)	FES BDI	Strong relationship between level of depression and the negative report of family environment, independent of diagnosis.
Kog et al. (1987, 1989)		Leven Family Questionaire	Also used behavioural observation (see below)
Esparon & Yellowlees (1992)	Clinical - AN (19) - BN (15) Nonclinical controls (34)	EMBU (Swedish instrument - assesses patients experience of parental practices)	Both AN and BN patients rated parents as less consistent in their rearing attitudes (more disorganised), less emotionally warm and more rejecting than controls. BN group rated parents lower on emotional warmth and greater on rejection than the AN group.

Table 1 continues...

Table 1 (cont.)

Summary of family interaction studies

Authors	Type of subject (n)	Measures	Significant findings
Observational	**Studies**		
Humphrey (1986)	Clinical - BN (20) - AN (20) - AN/BN Nonclincial controls (20)	SASB	BN and AN/BN experienced deficits in parental nurturance relative to controls. All three ED experienced deficits in empathy, and viewed parents as more blaming, rejecting, and neglectful.
Humphrey (1989)	Clinical families - RAN (16) - BN (16) - BAN (18) Nonclinical Controls (24)	SASB	RAN parents more nurturing and comforting, but also more ignoring ad neglecting towards daughters than parents of controls or BN, BAN. BAN and RAN daughters more submissive. BN+BAN and mothers showed more hostile emeshment than in normal families. Other ED groups not significant different to controls. ED fathers more watching and managing, belittling, and blaming toward daughters, and daughters more sulking and appeasing. Control parent-child interactions characterised by a higher percentage of helping and protecting, trusting and relying on, and approaching and enjoying one another than ED families. ED families used significantly more complex, contradictory communications.
Wonderlich & Swift (1990)	Clinical - BN (26) - AN (11) - AN/BN (11) Nonclinical controls (29)	SASB MCMI Dysthmia Scale	Ed groups equalled Controls when level of dysthmia statistically controlled for. Only ED groups with high dysthmia differed from control subjects on ratings of relationship with parents.
Szmukler, Eisler, Russell, & Dare (1985)	Clinical - AN (34) - BN (17)	Camberwell Family Interview	Parents EE scores associated with dropping out of treatment. BN parents more critical and fathers more emotionally over-involved than AN. In BN families, family relationships more disrupted and arguments more prominent.

Table 1 continues...

Table 1 (cont.)

Summary of family interaction studies

Authors	Type of subject (n)	Measures	Significant findings
Kog, Vertommen, & Vandereycken (1987)	Clinical families - RAN (30) - BAN (9) - BN (9) - Atypical ED (5)	Multi-trait method - Two behavioural methods (direct observation & behavioural product measures) - Self-report - Leuven Family Questionnire	Symptomatology not connected with a particular type of family functioning. Criticise the self-report method, only one strong correlation with behavioural measures: on conflict - global experience of negativity, more disagreements and lack of conflict resolution. Also found support (on behavioural measures) for three of Minuchin's concepts - adaptability, boundaries, and conflict. Suggest that boundaries refer to degree of differentiation of subsystems within the family, or the degree of individuation vs. co-ordination, as distinct from 'cohesion, or the degree of togetherness as perceived by the family members themselves.
Kog & Vandereyken (1989)	Clinical families - RAN (19) - BAN (6) - BN (5) Nonclinical control families (30)	Behavioural observation (Semi-structured tasks) Leuven Family Questionaire	ED families showed more stability and discussed disagreements less openly. RAN and BAN families had interpersonal boundary problems, and a stable and conflict-avoidant way of interaction, which was experienced as nonconflictual and cohesive by the patient. BN family showed strong interpersonal boundaries, a less stable organisation, and less avoidance of disagreement. Patient described family as conflictual, uncohesive and badly organised.
Schmidt, Tiller, & Treasure (1993)	Clinical - RAN (64) - BAN (23) - BN/hist AN (37) - BN (79)	Ratings of parental behaviour	BN's excessive parental control, intrafamilial discord, experienced greater parental disappointment than AN.

Abbreviations.
AN, anorexia nervosa (RAN, restrictory type; BAN, binger type); BN, normal weight bulimia nervosa, no history of AN; BN/AN, Full criteria for both AN and BN; BN/history AN: Bulimic patients with a history of anorexia nervosa; ED: combined Eating Disoders.

As is evident in Table 1 both self-report and observational studies show the families of clinical eating disordered patients as less functional than those of non-clinical control families. Specifically women with eating disorders have been found to perceive their families as more rigid (Dare, Le Grange, Eisler, & Rutherford, 1994; Garner, Garfinkel,

& O'Shaughnessy, 1985; Waller, Slade, & Calam, 1990), conflictual (Johnson & Flach, 1985; Kog & Vandereyken, 1989; Kog, Vertommen, & Vandereycken, 1987; Schmidt, et al., 1993; Shisslak, McKeon, & Crago, 1990; Stern, Dixon, Jones, Lake, Nemzer, & Sansone, 1989; Szmukler, Eisler, Russell, & Dare, 1985), and overprotective (Calam, Waller, Slade, & Newton, 1989; Rhodes & Kroger, 1992); and as less nurturing (Calam, et al., 1989; Dare, et al., 1994; Esparon & Yellowlees, 1992; Humphrey, 1986; McNamara & Loveman, 1990; Rhodes & Kroger, 1992; Shisslak, et al., 1990; Stern, et al., 1989). Reserach also suggests the families of women with eating disoders are less cohesive (Blouin, Zuro, & Blouin, 1990; Dare, et al., 1994; Johnson & Flach, 1985; Kog & Vandereyken, 1989; Leon, Lucas, Coligan, Ferdinande, & Kamp, 1985; Shisslak, et al., 1990; Steiger, Puentes-Neuman, & Leung, 1991; Stern, et al., 1989; Strober, 1981; Waller, et al., 1990), and characterised by more communication problems (Blouin, et al., 1990; Garner, et al., 1985; Humphrey, 1989; Johnson & Flach, 1985; Kent & Clopton, 1992; Leon, et al., 1985; McNamara & Loveman, 1990; Shisslak, et al., 1990; Stern, et al., 1989).

These findings are by no means conclusive. They tend to disappear when non-clinical community samples are studied (Kent & Clopton, 1988; Kent & Clopton, 1992; Rastam & Gillberg, 1991a), which raises the possibility that the differences may be the result of referral bias, such as the chronicity of the disorder. Similarly, other studies have found that the differences in family environment may be a function of depression. When depression is controlled for many of the differences between eating disordered and control families disappear (Blouin, et al., 1990; Thienemann & Steiner, 1993; Wonderlich & Swift, 1990). Due to this conflicting evidence it has been suggested that many of the observed differences in the family environments of eating disordered patients may be consequences rather than antecedents of the illness. Eisler (1995) points out however, that such an explanation is misleading as it overlooks the constant interaction between family members, and as eating disorders develop in the context of the family the distinction between antecedents and consequences is rather arbitrary. Overall, at this point, it can be concluded that while considerable heterogeneity exists between families of

women with eating disorders, differences do exist, particularly in the families of women with bulimia nervosa.

1.1.7. Family Interaction and the Domain of Eating

Much of this research tries to search for general interaction patterns and types of family relationships in families in which a member has an eating disorder. What may prove more fruitful is to look for differences in the way families of individuals with eating disorders interact in certain contexts. Costanzo and Woody (1985) point out that parenting may be domain specific, such that parents may socialise their children differently in different domains. It is possible to hypothesise, for example, that parents may manifest quite different parenting behaviours in the domains of food and eating than they do with regard to education or friendships. The feeding relationship is one of the earliest and most important ones between parent and child, particularly between mother and child (Beattie, 1988; Charone, 1981). Kalucy (1977) noted that in many eating disordered families, much of their communication and interaction focused around food and eating, with the parents valuing their role as "nutritional agents".

Parental influences on food, eating and weight

There is considerable evidence that parents do affect their child's eating behaviour, food preferences, and weight. A number of studies have examined the parents' role in childhood obesity. Waxman and Stunkard (1980) found that mothers served their obese sons far larger portions than his non-obese brothers. Moreover, Sherman, Alexander, Clark, Dean and Welter (1992) propose that obesity is often learned as a result of continuing exposure to the environment of eating and inappropriate hunger-free eating behaviour (such as using food as a reward or pacifier). Hartz, Giefer and Rimm (1977, in De Man, 1987-1988) found that family environment such as parental example and child rearing techniques accounted for between 32% and 39% of the variation in obesity as compared to 11% for heredity. Agras, Berkowitz, Hammer and Kraemer (1988)

found that a pattern of rapid eating in mothers and a long meal duration in fathers were both associated with a higher caloric intake in their 18 month old children.

Food preferences are also affected by parents. Werle, Murphy and Budd (1993) found that when mothers initiated regular offerings of previously rejected foods, and increased their use of specific prompts and positive attention, their child's acceptance of target foods increased. Similarly Harper and Sanders (1975) found that children were more likely to sample an unfamiliar food when an adult was eating it than when it was merely offered. Hertzler (cited in Ray & Klesges, 1993) found that children receiving negative feedback about their eating behaviour were shown to like fewer foods, especially vegetables. While Birch and colleagues (Birch, Marlin, & Rotter, 1984; Birch, Zimmerman, & Hind, 1980) found that when nutritious food was paired with praise and positive adult attention children showed increased preference for this food, and food offered as a reward significantly increased in desirability .

Parental behaviour has been found to affect a child's eating behaviour in a variety of ways. Klesges, Coates, Brown, Sturgeon-Tillisch, Moldenhauer-Klesges, Holzer, et al. (1983) found that in children aged 12 to 36 months, parental prompts, especially parental encouragements to eat, correlated highly with the child's relative weight, and increased the probability that the child would eat. Likewise Iannotti, O'Brien and Spillman (1994) and Koivisto, Fellenius and Sjoden (1994) found that parental prompts to eat increased both the child's eating behaviour and the amount eaten by the child. Satter (in Ray & Klesges, 1993) reported that the diet quality of adolescent females decreased as family interference and criticisms related to eating increased. Similarly Lindberg, Bohlin, Hagekull and Thunstrom (1994) found that early food refusal in children was associated with more psychosocial problems in the family, and less positive maternal perceptions of parenting. They suggested that this was evidence for an interaction between family stress, maternal attitudes, and the eating behaviours of children.

Interestingly, in a recent study Birch and Fisher (1995) found that 'who's in control' of food and feeding significantly affects the child's food consumption, particularly the child's ability to use internal cues of hunger and satiety in controlling their food intake. They found that out of control parents who were not sensitive to their own hunger and satiety cues were more overweight and tended to have children who also failed to regulate energy intake well. Furthermore, a high degree of parental control in the feeding context constrained meal size and timing, and impeded the child's regulation of energy intake. Similarly, Kintner, Boss and Johnson (1981) found that in families characterised by high levels of conflict, control and organisation, the members had poorer diets.

Eating pathology and the eating disorders

In terms of families in which an individual already has an eating disorder, there is also some evidence for difficulties in feeding and eating behaviours. Blitzer, Rolins, and Blackwell (1961, cited in Thelen, Lawrence, & Powell, 1992) found that over half of their sample of 15 children with anorexia nervosa had had premorbid feeding difficulties, including parent-child conflict over food. Marchi and Cohen (1990) suggested that their finding of increased rates of pica in the early childhood's of patients with bulimia nervosa may be indicative of a more general tendency towards indiscriminate or uncontrolled eating behaviour. They also found that problem meals (such as mealtime fights) were a risk factor for extreme symptoms of bulimia nervosa ten years later; while extreme symptoms of anorexia nervosa in adolescence were foreshadowed by picky eating and more digestive problems in early and later childhood. Rastam and Gillberg (1992) reported that their sample of 51 adolescent girls with AN had experienced significantly more early feeding problems, including constipation, vomiting, and diarrhoea, than the matched controls.

Bizarre eating practices have been documented in women with clinical eating disorders (DSM-IV, 1994) and Abraham, Mira, Beumont, Sowerbutts and Llewellyn-Jones (1983) noted characteristic patterns of food disposal, and excessive mixing and

chopping up of food in patients with anorexia nervosa. Aberrant eating behaviour has also been noted in patients with bulimia nervosa (Hetherington, 1993; Kissileff, Walsh, Kral, & Cassidy, 1986). Clinical studies describe chaotic patterns of consumption, large caloric intakes, and rapid intakes (Abraham & Beumont, 1982; Mitchell, Pyle, & Eckert, 1981; Rosen, Leitenberg, Fisher, & Khazam, 1986). Similarly, Hetherington, Spalter, Bernat, Nelson and Gold (1993) found that in comparison to controls the eating behaviour of bulimic patients was more disturbed even when not bingeing. The patients with bulimia exhibited more behaviours such as expressing distaste, picking at foods, abnormally slow eating, and had a more negative affect during eating.

Wilson, Touyz, Dunn and Beumont (1989) found that 15 anorexia nervosa patients continued to eat abnormally even after treatment. They demonstrated more eating "fads" such as bizarre food combinations or ritualistic ways of eating; and more picking at food, meticulous dissection of food, poor table manners involving eating utensils, more signs of distaste for food, greater social withdrawal and a lack of normal verbal contract with peers during a meal; and either abnormally slow or abnormally rapid eating. Elmore and de Castro (1991) also reported that their group of treated bulimic still demonstrated abnormal eating patterns in that they showed a lack of reponsivity to the signals that influence meal size and inter-meal intervals in women with no history of BN, and also demonstrated impaired social facilitation of eating.

Summary

Overall there seems evidence that parents can and do influence the food preferences, eating behaviour and to some extent the weight of their offspring. The mechanism behind this could be a relatively low level form of observational learning, coupled with social facilitation, in that parents are both modelling their own eating behaviour to their children, and shaping their children's eating behaviours and food preferences through a variety of behaviour modification techniques such as encouragement to eat, and positive and negative feedback. There also seems to be evidence that those with an eating disorder have a greater history of eating problems than

controls, and have more abnormal eating behaviours than individuals without such a diagnosis, even after treatment.

1.1.8. Nutrition and Eating Disorders

Given that parents influence the eating behaviour of their children, they will also invariably affect what their child eats, not only in terms of food preferences but also in terms of nutritional intake. Caloric intake has been found to be correlated between mother and child (Agras, et al., 1988; Kintner, et al., 1981; Ray & Klesges, 1993), and mother's choice of food has been found to affect the nutritional status of her child (Cousins, Power, & Olivera-Ezzell, 1993). It is possible therefore that if the eating patterns and food preferences of a child's mother are abnormal then those of her child may also be affected.

Bulimia nervosa has been found to impact on the food choices and dietary intake of its sufferers. When bingeing, women with BN tend to consume a lower percentage of protein and a higher percentage of fat than during non-binge episodes (Gendall, Sullivan, Joyce, Carter, & Bulik, 1996), consume more carbohydrates and other 'junk' foods (Rodin & Reed, 1988; Weltzin, Hsu, Pollice, & Kaye, 1991), particularly desserts and snack foods, and eat fewer fruits and vegetables (Hadigan, Kissileff, & Walsh, 1989; Rosen, Leitenberg, Fisher, & Khazam, 1986). When not bingeing, women with BN tend to show high levels of dietary restraint (Gendall, et al., 1996) and a preference for "healthy foods" such as fruit and vegetables that are low in calories (Gendall, et al., 1996; Kaye, Weltzin, McKee, McConahan, Hansen, & Hsu, 1992; Rodin & Reed, 1988). They also tend to avoid animal and dairy products, leading to deficiencies in many of their diets in calcium, iron and zinc (Gendall, et al., 1996). Similarly Woell, Fitcher, Pirke and Wolfram (1989) found that half of their sample of women with bulimia nervosa did not meet recommended dietary allowances for vitamins B1, B6, C, D, and E, and two thirds did not meet recommendations for iron. Interestingly, even after treatment the diets of women with bulimia were still found to be nutritionally inadequate, especially

in fibre, fat, potassium, calcium, magnesium, iron, and thiamine (Kirkley, Agras, & Weiss, 1985).

The nutritional patterns and food choices of women with anorexia nervosa have also been found to be different to control subjects. Overall they tend to have a lower energy intake than controls (Fernstrom, Weltzin, Neuberger, Srinivasagam, & Kaye, 1994; Huse & Lucas, 1984; Van Binsbergen, Hulshof, Wedel, Ddink, & Coelingh Bennink, 1988) and show a marked avoidance of fat (Beumont, Chambers, Rouse, & Abraham, 1981; Drewnowski, Pierce, & Halmi, 1988; Fernstrom, et al., 1994; Van Binsbergen, et al., 1988). In terms of carbohydrate intake, reports differ between an avoidance of carbohydrates (Van Binsbergen, et al., 1988), a preference for them (Fernstrom, et al., 1994), and no difference in carbohydrate intake between women with anorexia and controls (Beumont, et al., 1981). Huse and Lucas (1984) studied the dietary patterns of 96 patients with anorexia nervosa and concluded that overall, "beyond the generalisation that there is caloric restriction ... there was great variability in the diet patterns" (p.254).

However even in adolescents without an eating disorder a recent study of adolescents reported that dieting attitudes and behaviours were associated with inadequate intakes of calcium, retinal, iron and zinc (Gibbons, Wertheim, Paxton, Petrovich, & Szmukler, 1995). Consequently it seems possible that mothers with an eating disorder, even those who have received treatment and are no longer actively eating disordered, may still have abnormal patterns of eating. Moreover it is possible that their own food choices and patterns of nutritional intake may be passed on to their children. This may occur through children developing preferences to foods their mothers prefer, or the mothers either not having certain foods in the house or having a predominance of certain foods available, or alternatively, through the foods a mother chooses to offer her child in her belief of what constitutes a "good" diet. There do not appear to be any studies examining the nutritional intakes of the children of mothers with an eating disorder.

1.2. PARENTS WITH EATING DISORDERS

Overall, there is considerable evidence that the families of women with eating disorders differ from those of women without eating disorders. This section will examine the increasing evidence that women with a past or current diagnosis of an eating disorder may experience some difficulties parenting their children. There are a number of reasons why children of women with a past or current diagnosis of an eating disorder are at risk. Given that their mothers have, or have had, an eating disorder, it follows that their mothers have a number of the risk factors themselves, and those risk factors may be passed on to their children. This may occur for a variety of reasons, including genetic factors and temperamental traits, and in the way the mothers with an eating disordered parent, both as a result of the way they themselves may have been parented, or due to the effects of their eating disorder, such as a preoccupation with weight, eating, and body image.

There are a growing number of studies that have been completed with women who have currently or historically had a diagnosis of an eating disorder and now have children. These will be summarised within a number of subsections so as any trends within areas are highlighted. The main results are summarised in Appendix A.

1.2.1. Pregnancy and Childbirth

Despite the effects of acute eating disorders on menstruation and fertility (regardless of body weight) (Kreipe, Strauss, Hodgman, & Ryan, 1989), most women are able to have a child on cessation of their active eating disorder or after the appropriate treatments (Kohmura, Miyake, Aono, & Tanizawa, 1986). However the behaviours associated with an active eating disorder place both mother and baby at increased risk of complications. Low pre-pregnancy weight and low weight gain during pregnancy are strongly associated with low infant birth weight (Abrams & Laros, 1986) and an increased risk of congenital malformations (van der Spuy, Steer, McCusker, Steele, & Jacobs, 1988). Five case studies reported in Franko and Walton (1993) of anorexic women all described a failure to gain adequate weight during

pregnancy. Other studies have found that the use of diuretics and excessive exercise, common in women with eating disorders, can also cause complications during pregnancy, and pose serious risks to the foetus (Shearer, 1980; Carpenter, et al., 1988, in Franko & Walton, 1993). Overeating and bingeing can lead to excessive weight gain and therefore increase the risk of complications such as pre-eclampsia and hypertension (Shepard, Hellenbrand, & Bracken, 1986, in Fairburn & Welch, 1990). Furthermore, Mitchell, Seim, Glotter, Soll and Pyle (1991) found that the number of miscarriages in actively bulimic women were slightly higher than the rate in control women.

Treasure and Russell (1988) found that all seven infants of women with anorexia nervosa were growth impaired, all being below the third centile for abdominal circumference at birth. Similarly Brinch, Isager and Tolstrup (1988) found in their Danish study of 50 women with a past diagnosis of anorexia nervosa who had given birth to 86 babies, that 14% of infants were born below the third centile for weight, a rate twice that normally expected. Furthermore this group had a rate of prematurity twice that expected and perinatal mortality six times the national average of the time. Lacey and Smith (1987) found that despite an improvement in bulimic symptomatology during the pregnancies of all but one of their sample of 20 women with bulimia nervosa, there was a high rate of obstetric complications and congenital abnormalities in their offspring.

There is some evidence however that many of these complications may be due to the severity of the eating disorder symptomatology. Stewart, Rasking, Garfinkel, McDonald and Robinson (1987) studied 15 women with an eating disorder and found that all women who were symptomatic throughout their pregnancies gained less weight and had infants with smaller birth weights and lower APGAR scores than those whose symptoms remitted during their pregnancy. Furthermore both Namir, Melman and Yager (1986) and Rand, Willis and Kaulday (1987) found that when adequate weight gain was achieved in their pregnancies, women with anorexia nervosa delivered normal weight infants with no extra complications, and had a rate of birth defects no higher than expected.

1.2.2. Infant Feeding Method

Breast feeding has been postulated to be under the control of the infant more than bottle feeding which the mother tends to control (Wright, 1988). This possible difference in control, combined with the very physical nature of breast-feeding, and the difficulties women with an eating disorder have with their body image (DSM-IV, 1994) may lead to women with an eating disorder preferring one method of infant feeding over another. Only one study has examined this issue directly. Evans and le Grange (1995) found that while clinical and control mothers breast and bottle fed their infants in similar numbers and for similar durations, the former group stuck more rigidly to the feeding guidelines of health professionals, despite this schedule feeding often causing them confusion and anxiety. They concluded that this could be the result of a lack of confidence in their own capacity to recognise and respond to their baby's hunger signals, or may represent an attempt to provide proper and regular nutrition by diligently adhering to professional advice.

The clinical mothers in the Evans and le Grange (1995) study also reported considerably more difficulties such as insufficient lactation and their infants allergy to breast milk. Others have also found that the majority of mothers with an eating disorder have difficulties with breast-feeding. Stein and Fairburn's (1989) sample of five anorexic mothers all had difficulties breast feeding and consequently stopped within five weeks. Three reported it to be distasteful and adversely affecting their appearance, and another stopped (while on a restricted diet) due to what she perceived to be insufficient milk. Treasure and Russell (1988) studied six women with AN and five of those also ceased breast-feeding within the first few weeks. Brinch, et al. (1988) and Lacey and Smith (1987) did find that their samples of mothers with eating disorders had very positive attitudes to breast-feeding, although the majority did have problems with it. Thirty-six of 43 anorexic mothers breast-fed (Brinch, et al., 1988), with reasons for not breast feeding or for early weaning most commonly being insufficient milk, or mastitis, only two of their mothers giving preference reasons. The majority of mothers with bulimia nervosa studied by Lacey and Smith (1987) had problems, and consequently 13 of 20 introduced partial bottle feeding though reported regretting the necessity. Despite the

prevalence of claims of insufficient milk supply among mothers with an eating disorder, it is perhaps important to note that a deficient diet does not signifiantly affect the milk yield of mothers, and insufficient milk supply is an extremely rare occurrence provided the infant is fed in response to it's hunger (Anderson, 1985).

1.2.3. Parenting Issues

The feeding context

There is growing evidence that women with a current eating disorder experience considerable difficulties in the context of feeding their children. There have been numerous case reports of mothers with an eating disorder restricting the amount of food in the house (Stein & Fairburn, 1989), of not cooking for their children (Woodside & Shekter-Wolfson, 1990), of not eating in front of their children (Evans & le Grange, 1995; Woodside & Shekter-Wolfson, 1990), and cases of mothers who feared that the proximity to food while feeding their children would provoke a binge (Fahy & Treasure, 1989; Lacey & Smith, 1987).

There are also cases of mothers with eating disorders underfeeding their children, primarily in mothers with a diagnosis of AN. Perhaps the most extreme example is that of Smith and Hanson (1972) who reported on a women with a diagnosis of AN who starved her ten-week old daughter to death. There have been other case reports of the children of women with AN being underfed (Scourfield, 1995), even to the point of failure to thrive (Stein & Fairburn, 1989; van Wezel-Meijler & Wit, 1989). In their larger comparison study, Brinch, et al. (1988) reported that 17% of the 75 children of mothers who had had a diagnosis of AN had failure to thrive in the first year of their life. Failure to thrive was defined as insufficient weight gain, impaired well-being and eating problems, as described by the mothers themselves.

Evidence also exists for the children of parents with an eating disorder having more eating pathology. A child in Stein and Fairburn's (1989) study was described as resistant and difficult to feed, and four of the index children were described as fussy eaters as opposed to

one control child in Evans and le Grange (1995) comparison study. Woodside and Shekter-Wolfson (1990) followed up 12 parents with an eating disorder and found that three children had begun dieting in response to their parents obvious weight loss, one of these had developed AN and one had a diagnosis of BN. While in Brinch, et al.s' (1988) follow up study, one 13 year-old daughter of a mother with AN had AN herself, and subsequently died at 15 years of age.

There has been only one study to date examining the mealtime behaviours of mothers with an eating disorder. Stein, Woolley, Cooper and Fairburn (1994) studied a group of 27 nonclinical women and seven clinical who exhibited significant eating disorder psychopathology at some point in their infants life, their infants aged 12 to 14 months old, and a group of 24 control mothers and their infants. Video taped observations were made of mothers and their infants during both a mealtime and a play situation. They found that the index mothers were more intrusive and less facilitating during mealtimes and play, and expressed more negative emotion and more conflict with their infants than control mothers, during the meal but not the play time. The index mothers' infants were less cheerful during both the meals and the play, and tended to weight less, with both the amount of conflict and the extent of the mother's concern about her own shape being related to her infants weight. This study provides some evidence of a relationship between eating disorder psychopathology in mothers and disturbances in parenting, mother-infant interaction, and infant development.

Non-food aspects of parenting

Both Stein and Fairburn (1989) and Fahy and Treasure (1989) report cases of women who ignored their children (usually by confining them to their rooms) while engaged in bingeing and purging, including one women in each study who physically punished their child for interrupting them. Woodside and Shekter-Wolfson (1990) reported 12 cases of parents with eating disorders, including two males, and found few expressed happiness about their role as a parent, and demonstrated high rates of family pathology. Two parents had abandoned their children and three others had left them for long periods of time, primarily as a result of

their eating disorders. They also reported that many of the parent-child relationships were quite distorted, and that there were high levels of marital pathology, including seven of the 12 having divorced or separated and three others describing ongoing marital conflict.

Mothers with eating disorders also appear more likely to be unhappy about the weight or shape of their children. Three of the six mothers discussed by Stein and Fairburn (1989) described concerns about the shape and weight of their children, while van Wezel-Meijler and Wit (1989) reported that two mothers in their study showed open disapproval of their children being fed in hospital and uttered their disgust concerning the "fatness" of their children. Fahy and Treasure (1989) however, found in their sample of mothers with BN, that none were unduly concerned about their children's shape or weight and reported that it was their clinical impression that this was more a concern in mothers with AN. In a recent comparison study Evans and le Grange (1995) asked ten mothers with an eating disorder and ten control mothers, to rate their child's current body figure and the figure they would ideally like their child to resemble on a scale of figure drawings. They found that the index mothers were no more dissatisfied with their children's bodies than the control mothers. However there was a strong relationship between the level of satisfaction a mother showed about her own body and that shown by her child, a relationship that tended to be stronger in the index group.

1.3. CONCLUSIONS AND AIMS OF THE PRESENT STUDY

In light of the literature review above, children of mothers with an eating disorder may be at a greatly increased risk of developing an eating disorder themselves. They may have the genetic diathesis for obesity, for eating disorders themselves and the other forms of psychopathology often found in eating disordered women such as affective disorders and substance abuse. They may have inherited some of the temperament traits which may have made their mother predisposed to an eating disorder, or alternatively, their mother as a result of her temperament, may parent in such a way as to accentuate some traits in their children or de-emphasise others. Their mother may also parent in problematic ways, given that she herself may have been part of a family characterised by

problematic ways of interacting, particularly with regards to the domain of eating. Furthermore, the mothers distorted eating patterns may effect her children's eating behaviour, food preferences, and nutritional status. Finally, given that their mothers have (or have had) an existing clinical eating disorder with its associated distorted body image, and concerns with weight and dieting, this also suggests that their children are at risk.

The present study is designed to look for differences between two groups of children, those of mothers with a past or current diagnosis of an eating disorder and those with no such diagnosis. From the vast number of possible variables which could be selected the following variables will be investigated:

1. Health and development: In line with the existing research on the effects of a maternal eating disorder on offspring, the health and development of the children will be investigated.

2. Temperament: The children studied are all aged less than four years, and consequently their personality is still in its nascent stages, and temperament in these children is still a prominent determinant of their behaviour and interaction style. Furthermore it will be interesting to determine if any differences between the two groups of children exist at this young age, given the literature on temperamental differences in women with eating disorders.

3. Body satisfaction: Mothers' attitudes towards physical attractiveness and body size in their child will be measured, so as any differences between the two groups can be identified.

4. Mothers attitudes toward food and nutrition: In order to determine if the mothers in the two groups differ in their concern regarding what their children eat and how much control they prefer to have over their children's food intake.

5. The nutritional status of the children: In order to determine if any of the nutrient deficiencies noted in eating disordered and dieting populations are present in these children.

6. Mealtime interaction: This will be investigated in order to determine if the mothers with an eating disorder and their children have a particular way of interacting with each other during a mealtime. It will also be possible to determine if the two groups of children exhibit different mealtime and eating behaviors.

It is important to note that the children were the focus of the present study, not the mothers. This was done in order to remove as much of the pressure from the mothers as possible given that even post-treatment these women can be quite emotionally fragile, especially with regards to their parenting and their possible role in transmitting their eating disorder to their offspring (Sullivan, 1995).

2.0. METHOD

2.1. SUBJECTS

Twenty women and their toddlers aged between 12 and 48 months (inclusive) completed the study. Ethical approval for this investigation was granted by the Southern Regional Health Authority Ethics Committee (Canterbury) and the University of Canterbury Ethics Committee. Ten of the women who participated had a history of an eating disorder and ten control women had no such history Nine mothers with a history of an eating disorder were recruited through two existing studies. While involved in these studies the women had given permission to be contacted for future research, and had had the ages of their children noted. Of the twelve women contacted from the two studies, nine participated, the other three all declining explaining they were too busy to take part. One woman was currently receiving treatment for her eating disorder through the eating disorders service at a local hospital and she was asked to participate by her therapist.

The control women were initially to be recruited from the group of women randomly selected as controls for one of the existing studies. Only three of the pool of eight with children of the appropriate age were able to participate, again many declining due to being "too busy". The three that did participate were asked if they knew other women with children in the desired age group who would be willing to take part. Using this snowball method a further four women were recruited. The final three women were recruited through a local parents group with which the author was associated. These seven control women, particularly the final three, were selected on the basis of the gender and age of their children, so as to match the gender and age of the case children.

All the women were initially contacted by phone in order to briefly outline the study and ask if they would like to receive a full information sheet by mail before deciding if they would participate. The information sheet (Appendix B) outlined the study and

informed the women they would receive $10 for their participation. The women all signed a consent form before beginning their involvement (Appendix C)

2.2. INSTRUMENTS

2.2.1. Demographic and Developmental Interview

A brief interview (Appendix D) was designed for this study containing questions about the demographic details of the mother and child, including dates of birth, sibling and birth order details, ethnicity, and education and occupation of the mother and her partner. The developmental aspects of the questionnaire covered pregnancy information (health, smoking, and alcohol consumption), weights and heights of the target child, APGAR scores, initial feeding method (breast or bottle) and reasons for bottle-feeding if appropriate, developmental milestones of the target child, and the presence of health problems and significant stresses in the child's life.

2.2.2. Eating Disorders Inventory

The Eating Disorders Inventory (EDI) (Garner & Olmsted, 1984) is a 64-item self-report questionnaire designed to measure eight areas that are clinically relevant to eating disorders. Subjects are required to respond to each item by indicating the frequency with which the item relates to them on a six-point Likert scale ranging from "always" to "never". Three of the eight subscales were selected for inclusion in the present study (Appendix E). These three subscales measure attitudes and behaviours related to eating, appearance, and weight (Drive for Thinness, Bulimia and Body Dissatisfaction). The other five subscales asses a broader, more general range of constructs associated with eating disorders.

In brief the Drive for Thinness subscale measures the subjects preoccupation with dieting and the excessive fear of weight gain, the Bulimia subscale assesses the subject's tendency to binge and purge, and the Body Dissatisfaction subscale assesses dissatisfaction with the shape of the individuals hips, thighs, stomach and buttocks. The

EDI has been shown to be both a valid and reliable assessment device (Garner, Olmstead, & Polivy, 1983).

The EDI also includes a summary sheet which requires the mothers to fill out a brief form including their current weight and height, and their highest and lowest adult weights, enabling three indexes of body mass to be calculated. Their Body Mass Index (BMI; a height adjusted measure of adiposity) was calculated according to the following formula provided by the Statistical Bulletin (1984): BMI = Weight (kg) / Height (m^2).

2.2.3. Toddler Temperament Scale

The Toddler Temperament Scale was developed by Fullard, McDevitt and Carey (1984) in order to determine the temperamental characteristics of children aged 1-3 years (Appendix F). It assesses the nine New York Longitudinal Study (Thomas & Chess, 1977; Thomas, Chess, Birch, Hertizig, & Korn, 1963) temperament categories (Table 2) by eliciting parent responses to 97 behavioural categories. Mothers are also asked to give their impressions of the child's temperament in general in terms of easier, the same or more difficult than average.

The Toddler Temperament Scale has been standardised on 309 American children between the ages of 12 and 36 months, it demonstrates good reliability and validity (Fullard, et al., 1984). Due to the initial age pool of children recruited for this particular study having to be extended through until 47 months, norms for the 24 through 36 months children were used for those aged 36 through 47 months.

Table 2.

Temperamental Characteristics (reproduced from Carey, Hegvik, & McDevitt, 1988, p.195)

Activity: The amount of physical motion during sleep, eating, play, dressing, bathing, etc.

Rhythmicity: The regularity of physiologic functions such as hunger, sleep, and elimination.

Approach/withdrawal: The nature of initial responses to new stimuli - people, situations, places, foods toys procedures.

Adaptability: The ease or difficulty with which reactions to stimuli can be modified in a desired way.

Intensity: The energy level of responses, regardless of quality or direction.

Mood: Amount of pleasant and friendly or unpleasant and unfriendly behaviour in various situations.

Persistence/attention span: The length of time particular activities are pursued by the child, with or without obstacles.

Distractibility: The effectiveness of extraneous environmental stimuli in interfering with ongoing behaviours.

Sensory Threshold: The amount of stimulation, such as sounds or light, necessary to evoke discernible response in the child.

2.2.4. Body Satisfaction

This self report questionnaire (Appendix G) consisted of three items asking the mother to rate how attractive she felt her child is in relation to other children the same age, and how important physical attractiveness in her child was to her. A five-point Likert scale was used in which one represented much more physical attractive and extremely important (respectively) and five represented much less physically attractive and not at all important (respectively). Mothers were also asked whether or not they had ever attempted to change their child's appearance. These questions were adapted from those used as part of a survey developed by Striegel-Moore and Kearney-Cooke (1994) which was administered to 1,276 men and women with children between 2 and 16 years old.

The other two items in this section presented the mothers with seven figure drawings of toddlers ranging in body size and shape. This scale was based on that developed by Evans and le Grange (1995) who based their instrument on those already utilised with older children and adults. The scale used by Evans and le Grange and that used here have not been formally validated or standardised. Two identical scales were presented to the mothers and they were asked to circle the figure which looked most like their child's actual size (ACTUAL), and circle that which depicted the size they would like their child to be (IDEAL).

2.2.5. Attitudes towards Nutrition

Mothers were asked to fill out a self-report questionnaire containing 25 attitude measures (Appendix H). This questionnaire was part of a larger instrument developed by Campbell (1995) as part of her study of parents knowledge, practices and attitudes concerning weaning diets. She administered it to 106 mothers in the Timaru area. Mothers were asked to circle one of the following choices: strongly agree/ agree/ not sure/ disagree/ or strongly disagree. These answers were then collapsed into categories of either agree or disagree in order for comparisons to be made with Campbell's (1995) research.

2.2.6. Food Diary

The mothers were shown how to keep a detailed record of their food intake using "Instructions for Keeping a Diet Record" [Bulik, 1992 - modified for children, (Appendix I)]. This involved the mother's recording all food and drinks consumed by their child for three days, preferably three consecutive days, with one being a week-end day and two being week-days. This combination of days was in order to control for the possibility of different foods being eaten by children on the weekend as opposed to during the week. All subjects completed the food diary in the appropriate manner, apart from two (one in each group) who were unable to complete it on three consecutive days.

Mothers were asked to be as inclusive as possible, including details of cooking method, type of food, and as exact as possible concerning size of portion. The food diary method has been found to be more reliable than asking subjects to recall their food intake retrospectively (Gendall, Sullivan, Joyce, Carter, & Bulik, 1996). The length of three days has also been found to provide an adequate estimate of nutrient intake without introducing error resulting from a lack of incentive to continue as longer records may do (Spark, 1992). However it has also been noted that merely asking subjects to complete a food diary may alter dietary intake in some subjects (Gendall, et al., 1996).

Coding was done using 'Diet Cruncher" (Marshall, 1991), a computer software programme designed to analyse the micro- and macro-nutrients of food, providing an average daily intake of each nutrient. These daily intakes for the micro nutrients were then compared with each other and with the Recommended Dietary Intakes (RDIs) for children aged 1 to 3 inclusively (Truswell, 1990). RDIs are defined as the levels of intake of essential nutrients that, on the basis of scientific knowledge, are judged by the Australian National Health and Medical Research Council to be adequate to meet the known nutritional needs of virtually all healthy people (Spark, 1992; Truswell, 1990). Currently New Zealand uses the Australian RDI's. A cut-off mark of 2/3rds of the RDI is made, below which is considered a health risk (Food and Nutrition Board of the National Research Council, 1985).

The macro nutrient intakes of the two groups were compared to the guidelines set out by the New Zealand Department of Health (Nutrition Task Force, 1991), which provide healthy guidelines (often maximum and minimum intakes) for intake of protein, fat, carbohydrate, sucrose and fibre as a percentage of energy, and cholesterol and fibre as maximum grams per 1000 calories.

2.2.7. Mealtime Observation Schedule

The Mealtime Observation Schedule (MOS) was developed by Sanders and Le Grice (1989) (Appendix J). This is a means of assessing parent-child interaction during

a mealtime, and provides a measure of children's problem and appropriate feeding behaviours and parents predominant tactics for dealing with the children's mealtime behaviour. It measures 17 categories of child-feeding behaviour (11 categories of disruptive mealtime behaviour and 6 categories of appropriate mealtime behaviour) and 14 categories of parent behaviour (6 of aversive behaviour and 8 categories of non aversive behaviour).

Measures were derived from the MOS as outlined by Sanders, Patel, Le Grice and Shepherd (1993, p.66) and reproduced here:

(a) percentage of intervals of overall disruptive feeding behaviour and percentage of intervals of individual disruptive feeding behaviours, which were calculated be summing the number of intervals containing any disruptive behaviour or each disruptive behaviour, dividing by the total number of intervals, and multiplying by 100,

(b) percentage of intervals of overall aversive parent behaviour and percentage of intervals of individual aversive parent behaviours,

(c) percentage of intervals of appropriate feeding behaviour, and

(d) percentage of intervals of non aversive parent behaviour.

All others were calculated as in (a) above.

2.3. PROCEDURE

All subjects were seen between May 1995 and August 1995, after an initial pilot study of one woman and her child. The mothers were each visited in their homes on two separate occasions. During the first visit the interview took place and the questionnaires were completed by the mother. The food diary instructions were explained, and the mother was told she could ring the researcher at any time if she had any queries regarding its completion. A second visit was then arranged in which a lunch time could be video taped, at a time convenient to the mother and child, preferably when no others were present. Two control and one case child had a sibling present during the lunch time. The

mothers interaction with the sibling was not coded. The entire procedure involved between 1 1/2 - 2 hours of the mother's time.

The mother and child pair were video taped in their own home as the current study was interested in interaction as it would usually occur (or as close to it considering the presence of video camera and researcher). Observation in the mothers own home seemed indicated on the grounds that a person's behaviour is influenced by the social and physical setting in which it takes place (Bronfenbrenner, 1979). It was emphasised to the mother and child that the researcher would not interact with either of them during the period of observation. This was important to avoid the mother or child speaking and/or doing things with the researcher rather than with each other. The evidence from other studies indicates that the presence of an observer does not alter parental behaviour in such a way that group differences are distorted (Schulman, Shoemaker, & Moelis, 1962). It was explained to the mother that she and her child should 'just carry on' with their ordinary lunch, and that there was no expectation that they should deliberately do or eat anything in particular with their child beyond what they would do if the researcher were not there.

2.3.1. Statistical Analysis

Data were entered and analysed using the JMP package (SAS, 1994). It was decided before the results were analysed not to correct for multiple comparisons. As numerous statistical comparisons were made the probability of a Type I error increases, whereby we conclude a difference exists when in fact one does not. While it is possible to modify the level at which a result is accepted as significantly different and not a chance finding (such as the Bon Ferroni equation) this was not done in the present study (Keppel, 1983). This is primarily an exploratory study, and it was therefore deemed important to recognise any potential trends in the data so as hypotheses can be generated, and so as to alert other researchers to domains worthy of further investigation.

3.0. RESULTS

3.1. SUBJECT CHARACTERISTICS

3.1.1. Characteristics of Mothers

Demographic Features

Table 3 outlines demographic features of the control and case mothers. The two groups did not differ significantly in terms of current age, their age at the birth of the target child, the number of children each had, or their education, marital or employment status.

Table 3

Characteristics of case and control mothers

Variable	Cases (N=10)			Controls (N=10)		
	Mean	SD	Range	Mean	SD	Range
Current age (yrs)	30.1	3.07	25-35	30.8	3.61	26-37
Age at birth of target child (yrs)	27.7	3.29	22-34	28.6	3.41	24-34
Number of children	2.2	1.07	1-4	2.2	0.87	1-4
	Number:			Number:		
Education level						
Tertiary	3			4		
Secondary	7			6		
Currently married	10			10		
Currently employed outside the home	5			4		

Body Mass Indices

The mean Body Mass Index (BMI) for the case and control groups are presented in Table 4. The differences in these are concordant with research which suggests that normal BMI's range from 20 to 25, with women with current anorexia nervosa refusing to maintain a minimum body weight for height (BMI=20), and those with bulimia nervosa usually of normal weight (Bulik, 1994).

Table 4.

Body Mass Indices for Case and Control mothers

Group	Current BMI		Highest BMI		Lowest BMI	
	Mean	Range	Mean	Range	Mean	Range
Controls	23.5	18-30	24.6	18-32	20.2	18-27
Cases						
AN (N=5)	21.4	19-24	23.7	21-26	19.0	16-21
BN (N=5)	23.4	19-33	24.5	21-34	20.0	17-23
Total (N=10)	22.4	19-33	24.1	21-34	19.5	16-23

EDI subscale scores

The EDI scores for the case and control mothers are presented in Table 5. Mean and individual scores were compared with norms for eating disorderd patients, and nonpatients (Garner & Olmstead, 1984). The mean scores for the case mothers were comparable to the nonpatient group, while the means for the control mothers were below the nonpatient norms. However two case mothers scored above the eating disorder group norms on the Drive for Thinness (scores of 20 and 19) and Body Dissatisfaction (scores of 25 and 27) subscales, and one was comparable to the eating disordered norms on the Bulimia subscale (a score of 12).

One other case mother and two control mothers were elevated on the BD subscale all receiving a score of 13. This is a level above the nonpatient norms but below those of the eating disorder group. Garner, Olmstead, Polivy and Garfinkel (1984) found a similar level in their sample of weight preoccupied women. No other control women had scores that indicated eating pathology. Overall therefore, three case mothers received scores on the EDI that indicated eating pathology.

Table 5.

Case and Control mother EDI scores for the DT, BD and B subscales

Group	Drive for Thinness		Body Dissatisfaction		Bulimia	
	Mean	Range	Mean	Range	Mean	Range
Controls	1.4	0 - 6	6.7	0 -13	0.2	0 - 2
Cases						
AN (N=5)	3.8	0 - 19	9.2	1 - 27	1.2	0 - 6
BN (N=5)	5.4	0 - 20	9.6	1 - 25	2.8	0 - 12
Total (N=10)	4.6		9.4		2.0	

3.1.2. Characteristics of the Children

Table 6 outlines the characteristics of the children. There were equal numbers of boys and girls and first born children in both groups, and their ages were also similar. Two case children and one control child had half siblings. These were included in the sibship patterns reported in Table 3 only if they were currently living with the target child (and all had been since the birth of the target child).

Table 6

Characteristics of case and control children

Variable	Cases (N=10)	Controls (N=10)
	Number:	Number:
Gender		
Boys	5	5
Girls	5	5
Current age (months)	Mean = 30.8	Mean = 30.7
	SD = 15.4	SD = 11.0
	Range = 13-47	Range = 14-47
Position in sibship		
First	5	5
Second	2	3
Third	1	1
Fourth	2	1
Number of siblings		
One	3	2
Two	4	5
Three	1	2
Four	2	1
	Mean = 2.2	Mean = 2.2

3.2. HEALTH AND DEVELOPMENT:

Pregnancy

The case and control mothers did not differ significantly in the state of health they experienced during their pregnancy [χ^2 (2) = 3.7, ns]. Of those who reported being unwell, all reported varying degrees of morning sickness, and one case mother was hospitalised for three days with dehydration due to morning sickness. Similar numbers of case and control mothers smoked during their pregnancy [χ^2 (2) = 1.1, ns]. The control mothers drank alcohol (all reported drinking wine) more frequently than the control mothers [χ^2 (2) = 6.3, p , 0.05]. Of those that drank more than three glasses of wine a month, one case mother drank two glasses a week, and the two control mothers drank one and three glasses a week respectively.

Infant feeding

All of the control mothers initially breast fed their children, versus eight of the case mothers. Both case mothers chose not to breast feed prior to the birth of their child, one due to being depressed, the other chose not to reporting she found it "embarrassing". Two case mothers ceased breast feeding within six weeks of their baby's birth, one due to "insufficient milk" and the other due to "embarrassment". No control mothers reported problems with breast feeding, all feeding until the child was at least 12 months or until fully weaned, as did the remaining six case mothers. This rate of six case and 10 control children being breast fed until weaning was statistically significant [χ^2 (1) = 5.0, $p < 0.05$]. Of those that did breast feed, the mean time that each group breast fed their child was not significantly different [t (18) = 1.53, ns).

Table 7

Health and development of case and control mothers and children during pregnancy and childhood.

Variable	Cases (N=10)	Controls (N=10)
	Number:	Number:
Maternal health during pregnancy		
Good	8	6
Fair	0	3
Poor	2	1
Cigarettes smoked		
None	8	9
1-4 per day	1	1
5 or more	1	0
Alcohol consumption		
None	9	4
1-2 per month	0	4
3 or more	1	2
Infant feeding method		
Bottle	4	0
Breast	6	10
Time breast fed (months)	M = 13.5 Range = 10 - 19	M = 11.8 Range = 8 - 16

Table 7 continues...

Table 7 (cont.)

Health and Development of case and control mothers and children during pregnancy and childhood.

Variable	Cases (N=10)			Controls (N=10)		
	Mean	SD	Range	Mean	SD	Range
Gestation (weeks)	40.0	0.9	39-42	40.3	0.8	39-42
Birth weight (gms)	3408.5	515.4	2460-4090	3932	569.4	2580-4620
Birth length (cms)	50.0	2.0	45-52.5	54.5	3.8	47-61
APGAR scores						
One minute	8.2	0.87	7-9	8.8	0.6	8-10
Five minutes	9.6	0.49	9-10	9.9	0.3	9-10
Developmental milestones (months)	Mean		Range	Mean		Range
Sit	6.2		3-8	5.6		4-7
Crawl	9.0		6-11	7.9		6-11
Walk	13.4		12-15	12.2		10-15
Single words	11.5		7-15	10.7		8-14

Child development

The mean scores of the control and case children on the various developmental measures are shown in Table 7. None of the children were premature, all being born between 39 and 42 weeks gestation. The children's APGAR scores were not significantly different at one or five minutes [$\chi 2$ (3) = 4.3, ns; and χ^2 (1) = 2.4, ns, respectively], although the case children tended to be lower than the control children at both times.

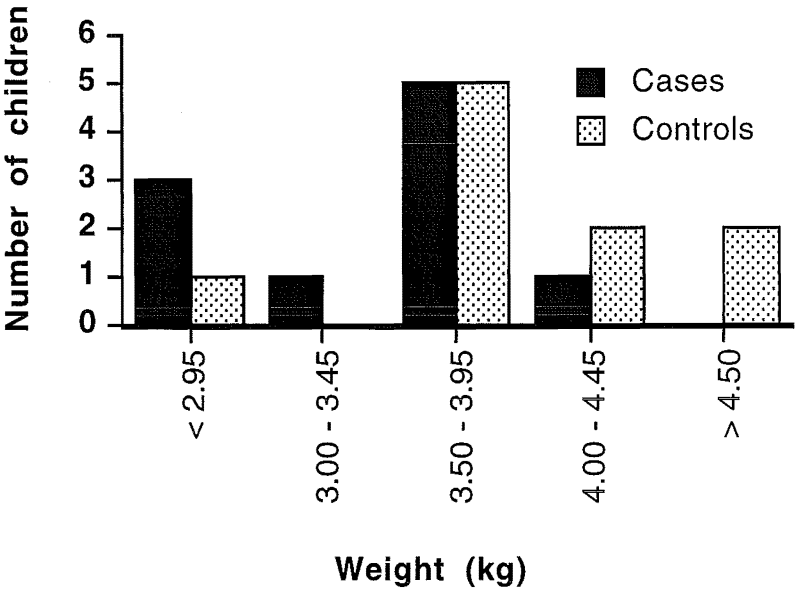
On average, babies in the case group were 13% (523.5gm) lighter than those in the control group [t (18) = 2.10, $p < 0.05$] and 8% (4.53cm) shorter [t (18) = 3.18, $p < 0.01$] at birth than the control children. One control baby was considerably heavier and longer at birth than all the other case and control children (4720gm in weight and 61cm long). When this baby was removed from the analysis the difference in weights between the two groups of children was no longer statistically significant [t (17) = 1.77, ns], however there remained a strong trend for the case infants to be lighter than the control infants, as is evident in Figure 1. Even with this large case baby removed from the analysis the control babies were still significantly longer at birth than the case babies [t (17) = 2.94, $p < 0.01$].

The significant difference in weights between the two groups of children was no longer evident when the children were 6 weeks old (either with or without the heavy control baby). However the difference in length remained at 6 weeks both with and without the large control baby [t (18) = 3.18, $p < 0.01$; and t (17) = 2.95, $p< 0.01$ respectively]. The two groups were no longer statistically different in length by 3 months of age, and had very similar mean weights.

Nine children in each group continued to develop within normal weight limits (between the 25th and 75th percentiles of New Zealand growth averages, Public Health Commission, 1994). Of the one child in each group that did not, both fell between the 25th and 3rd percentile lines, each dropping below the third percentile at two points, the control child at 9 and 12 months, and the case child at 3 and 6 months. In terms of height, two case children measured below the 25th percentile line, and two control children measured above the 75th percentile line, all others were between normal limits (ibid).

Figure 1.

Weight distribution of case and control babies



In terms of developmental milestones, the mean age in months at which each group achieved each milestone is given in Table 7. None of these were significantly different [Sit: t (18) = 0.8, ns; crawl: t (18) = 1.8, ns; walk: t (18) = 1.9, ns; single words (other than "mum" and "dad"): t (18) = 0.5, ns]. There was a trend for the case group to be slower at achieving each milestone in comparison with the control group, although none of the differences were statistically significant.

Child health

Five control mothers reported health problems in their child, one child had had whooping cough, four had a history of ear infections, one of these needing the insertion of ventilation tubes for repeated ear infections ("grommets"), and one child had broken her leg. Similarly five case mothers reported health problems in their children, one had serious eczema, two suffered from ear infections, and one of these children also had "clicky hips" at birth and had been hospitalised for a unknown virus for five days. Another case child had asthma needing constant medication, had several bouts of bronchitis and had a history of repeated kidney infections. One

other case child had been well apart from a "lump" being removed from his neck which was originally feared to be malignant.

Child 'stress'

All but one mother in each group reported that her child had experienced some form of stress in the year prior to the study. Table 8 gives a breakdown of the stresses experienced by each child. The "other" form of stress that mothers reported their child had experienced included the mother of child 4 beginning treatment for her bulimia nervosa; and child 10 being cared for by her grandmother while her mother was experiencing depression. The parents of child 8 had separated for a 3 month period. Four control children had experienced a death in the family, in two it was the death of a grand-parent, and in two the death of a great-grandparent. All mothers reported these deaths had been significant for the children.

Table 8

Stress experienced by children in previous 12 months (as reported by mothers)

	No reported stress	Start/ change daycare	Parent changed job	Child hospit-alised	Family move house	Birth of sibling	Death in family	Other
Case child								
1			√			√		
2			√					
3	√							
4		√						
5			√		√	√		√
6		√		√				
7		√						
8				√				
9					√			
10								√
Case totals	1	3	3	2	2	2	0	2
Control child								
1		√					√	
2					√			
3		√						
4							√	
5							√	
6	√							
7			√	√			√	
8								√
9		√			√			
10						√		
Control totals	1	3	1	1	2	1	4	1

3.3. TODDLER TEMPERAMENT SCALE

The means and standard deviations for the case and control children on each of the nine categories of the TTS are presented in Table 9. The means and standard error of the mean are also presented in histogram form in Figure 2. None of the mean differences between the case and control children proved to be statistically different at the 0.05 level of significance.

Table 9.

Means and Standard Deviations of Scores on the Nine Categories of the Toddler Temperament Scale for Case and Control Children.

	Case Children (N = 10)		Control Children (N = 10)			
Category	Mean	SD	Mean	SD	t-score	p <
Activity	3.7	0.7	3.4	0.7	0.9	n.s
Rhythmicity	2.9	0.6	2.6	0.7	1.1	n.s
Approach	2.9	1.1	2.9	1.1	0.1	n.s
Adaptability	3.3	0.8	2.9	0.8	1.2	n.s
Intensity	3.8	0.6	3.5	0.8	1.0	n.s
Mood	3.0	0.7	2.9	0.6	0.2	n.s
Distractibility	4.1	0.6	4.3	0.5	0.7	n.s
Persistence	3.6	1.1	3.4	0.8	0.5	n.s
Threshold	4.0	1.0	3.7	0.8	0.7	n.s

Figure 2.

Mean category scores and standard error of the mean for the Toddler Temperament Scale for case and control groups (the lower the score the "easier" the child).

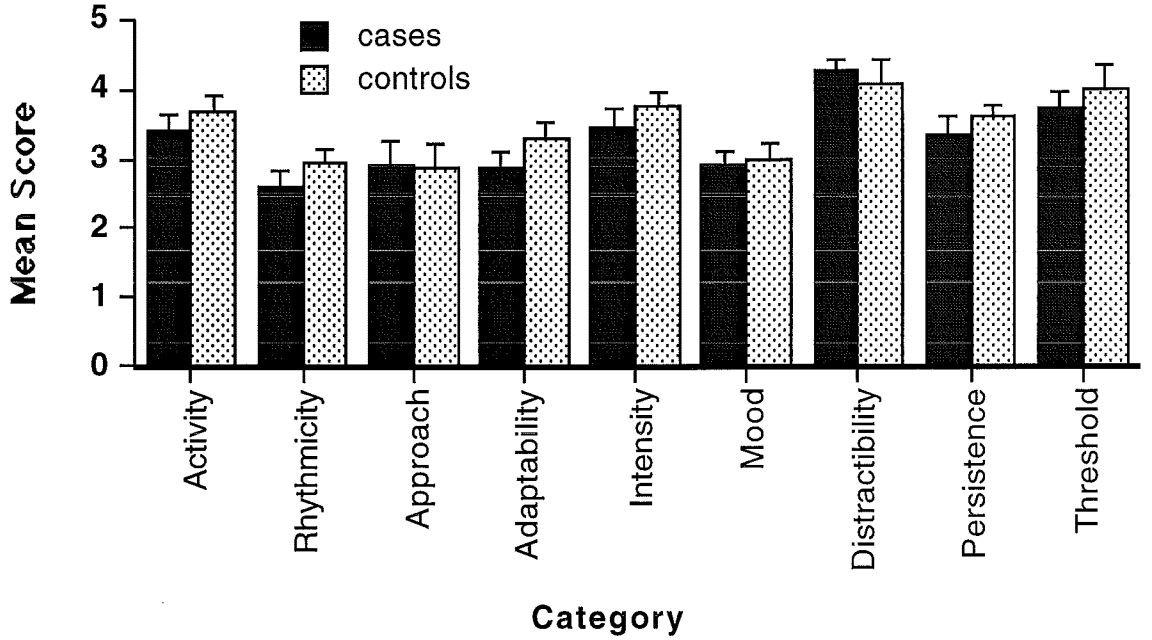


Table 10 provides a breakdown of the cluster ratings for each child provided by the rating scale itself, and in comparison to the percentages gained by Fullard, McDevitt and Carey (1984) in their standardisation sample of 340 children. The case and control children were not significnatly different in their temperament cluster as rated on the TTS by their mothers [Table 10; χ^2 (4) = 8.11, ns]; or in terms of how their mothers perceived them generally [Table 11; χ^2 (2) = 1.5, ns]. One case mother said her child was easier than the TTS cluster, compared with 2 case mothers; and 2 in each group rated their child as more difficult than the TTS cluster.

Table 10.

Cluster assignments for case and control children as designated by results from the Toddler Temperament Scale, and compared with TTS norms (Fullard, et al., 1984).

	Cluster:				
	Easy	**Intermed-iate-Low**	**Intermed-iate-High**	**Slow-to-Warm-Up**	**Difficult**
Cases	5	3	0	2	0
Controls	4	1	4	0	1
TTS Norms	38%	40%	14%	6%	12%

Table 11.

Cluster assignments for case and control children as designated by the mothers of the children.

	Cluster:		
	Easy	**Average**	**Difficult**
Cases	5	4	1
Controls	3	2	3

Overall from Figure 2 and Tables 10 and 11 the case children would appear to have "easier" temperaments than the control children with more being rated by both the TTS and their mothers as 'easy' or 'intermediate low', and fewer as 'difficult'although this could not be confirmed statistically.

3.4. BODY SATISFACTION

Table 12 shows a breakdown of responses to the question asking mothers to compare their child to other children the same age, with '1' being much more physically attractive and '5' being much less physically attractive. All mothers in both groups rated their child as a three or greater with no significant differences in rates of response [χ^2 (2) = 0.9,ns]. Table 13 shows a breakdown of responses of mothers when asked how important physical attractiveness is to them, and their responses were also not significantly different on this scale [χ^2 (3) = 4.0, ns].

Table 12.

Responses to question asking mothers to rate how attractive their child is in comparison to other children.

	Response:				
	Much more phsyically attractive	2	3	4	Much less physically attractive
Cases	1	6	3	0	0
Controls	2	4	4	0	0

Table 13.

Responses to question asking mothers to rate the importance of attractiveness.

	Response:				
	Extremely important	2	3	4	Not at all important
Cases	0	3	3	4	0
Controls	0	2	6	1	1

No control mothers reported ever having tried to help their child change their appearance, as opposed to 2 case mothers. One reported that she was "trying to feed [daughter] a little less" as she was concerned her daughter would become "fat"; and another reported using "rouge" on her daughters cheeks as she was concerned she was too pale. These two mothers were the two who both scored in the pathological range on the EDI.

On the two child figure drawing scales, only one case mother circled a different "ideal" figure to the "current" figure, and that was one ideal figure smaller (thinner) than the current figure [her child was below average weight for height (Public Health Commission, 1994) when weighed four months earlier]. The participant who did this was the same mother who was described above as feeding her daughter less. Two control mothers circled an "ideal" figure, one figure larger (chubbier) than the "current" figure. Table 14 shows the distributions of responses of mothers on the figure drawing scales, "1" represents an extremely thin child figure, and "7" a very chubby figure (refer Appendix G). The case and control mothers did not differ significantly in the "current" figure they circled [χ^2 (3) = 6.0, ns] or in the "ideal" figure they circled [χ^2 (3) = 3.1, ns].

Table 14.

Mothers' responses on body figure scale

	Response:						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Cases - Current	0	0	3	5	1	1	0
- Ideal	0	0	4	4	1	1	0
Controls - Current	0	0	5	1	4	0	0
-Ideal	0	0	3	3	4	0	0

3.5. NUTRITION QUESTIONNAIRE

The control and case mothers did not differ significantly from each other in their attitudes towards food and nutrition. The percentage of case mothers and control mothers who agreed and disagreed with each questionnaire shown in Table 15, as are the percentage of parents reported by Campbell (1995). Both case and control mothers had an opposite pattern of responses to the comparison population of Campbell (1995) on questions 3 and 5, with both groups showing a more relaxed attitude to feeding and nutrition than this larger population. Similarly both the case and control mothers had an opposite pattern of consensus on questions 23 and 24, suggesting that these two groups were not influenced by either their Plunket nurse's or their doctor's attitudes to food as the majority of the comparison population were.

Table 15.

Responses to nutrition questionnaire of case, control and comparison groups

	Item		Cases (%)	Controls (%)	Norms (%)
1.	I let my child choose whatever he/she wants for breakfast.	Agree	40	60	22
		Disagree	50	40	62
2.	I feel my child's nutrition now will be extremely important as she/he grows older.	Agree	90	100	99
		Disagree	0	0	0
3.	As long as my child does not pick the same thing constantly, I feel it is all right to let him/her select her/his own food.	Agree	40	80	26
		Disagree	20	0	51
4.	As long as my child is not sick, I guess I must be feeding her/him right.	Agree	50	60	29
		Disagree	40	40	55

Table 15 continues...

Table 15 (cont.)

Responses to nutrition questionnaire of case, control and comparison groups

	Item		Cases (%)	Controls (%)	Norms (%)
5.	The type of food one eats is important, and one should not be careless about it.	Agree Disagree	90 0	100 0	10 0
6.	If I give my child vitamins, I don't need to be so concerned about my child's diet.	Agree Disagree	0 100	0 100	1 96
7.	Children are more likely to eat well if they select the meat for the meal.	Agree Disagree	40 60	20 60	13 73
8.	If my child says "let's have _____ for lunch", I feel that I should do so.	Agree Disagree	0 80	10 90	10 57
9.	I feel that if the child drinks milk, I don't have to worry about nutrition.	Agree Disagree	0 100	0 100	1 95
10.	Because the children are fussy about what they eat, I feel it is necessary to let them pick what they want for meals.	Agree Disagree	10 90	20 80	5 87
11.	I feel that as long as my child is gaining weight, I don't have to worry about her/his nutrition.	Agree Disagree	0 100	0 100	2 83
12.	I just don't have time to think much about nutrition.	Agree Disagree	0 100	10 90	4 85
13.	The type of food is not so important as long as my child eats.	Agree Disagree	0 100	0 100	5 82
14.	I believe a child should be allowed to choose what he/she wants for breakfast and lunch, even if it means a little more preparation for me.	Agree Disagree	20 60	40 40	12 66

Table 15 continues...

Table 15 (cont.)

Responses to nutrition questionnaire of case, control and comparison groups

Item		Cases (%)	Controls (%)	Norms (%)
15. I am concerned about getting my child to eat "good foods" throughout the day.	Agree	80	80	74
	Disagree	20	10	15
16. Children should be allowed to eat whatever they want.	Agree	0	0	4
	Disagree	100	100	92
17. Young children don't grow correctly when they have improper diets.	Agree	80	60	77
	Disagree	10	20	5
18. I do give children food or drink to stop them crying.	Agree	30	40	26
	Disagree	60	60	54
19. I do give children food or drink if they wake at night.	Agree	20	20	22
	Disagree	80	60	64
20. My partner's attitudes to food affect what I give my children.	Agree	30	30	27
	Disagree	60	70	63
21. My mother's attitudes to food affect what I give my children.	Agree	0	0	25
	Disagree	100	100	67
22. My mother-in-law's attitudes to food affect what I give my children.	Agree	0	10	8
	Disagree	100	90	84
23. My plunket nurse's attitudes to food affect what I give my children.	Agree	30	20	63
	Disagree	70	80	29
24. My doctor's attitudes to food affect what I give my children.	Agree	20	10	56
	Disagree	70	80	32
25. My friends' attitudes to food affect what I give my children.	Agree	20	30	14
	Disagree	80	50	75

3.6. FOOD DIARY

Means and standard deviations for the case and control children's intakes of the micro and macro nutrients are presented in Table 16. Students t-test's revealed that the control children consumed significantly more sodium [t (18) = 2.24, p > 0.05], and thiamin [t (18) = 2.64, p > 0.01] than the case children. However although only these two were statistically significant the histograms (Figures 3 - 7) demonstrate that the case group did tend to be lower in total energy, fibre, sucrose, niacin, folate, and vitamins A, C, and E; and higher in cholesterol, calcium, riboflavin, and vitamin B6 intake.

A discriminant function analysis was performed on the nutrient intakes of the case and control children. Sodium and thiamin, combined with total energy intake successfully discriminated 80% of the control and case children (Pearson's: χ^2 (18)=7.2; p < 0.01).

Table 16.

Means and Standard Deviations of intakes of nutrients by case children and control children.

	Case Children (N = 10)		Control Children (N = 10)			
Category	Mean	SD	Mean	SD	t-score	p <
Macronutrients						
Energy	5512.5	1380.5	5035.6	1139.1	.84	n.s
Protein	13.3	2.6	15.5	3.9	1.5	n.s
Fat	31.2	5.5	32.3	6.4	0.4	n.s
Carbohydrate	55.8	6.5	52.1	6.9	1.2	n.s
Sucrose	14.3	8.2	9.5	5.6	1.6	n.s
Cholesterol	11.1	5.1	12.9	6.2	0.7	n.s
Fibre	9.9	2.9	8.4	3.4	1.1	n.s
Micronutrients						
Sodium	1364.4	629.0	1908.0	442.3	2.2	0.05
Magnesium	165.2	39.6	180.1	35.4	0.9	n.s
Potassium	1961.5	346.3	1824.0	392.1	0.8	n.s
Calcium	803.0	280.9	663.3	153.1	1.4	n.s
Iron	5.9	2.5	6.8	1.8	0.9	n.s
Zinc	5.3	1.3	5.4	0.8	0.2	n.s
Vitamin A	541.3	172.1	611.6	248.4	0.7	n.s
Thiamin	0.7	0.1	0.9	0.2	2.6	0.05
Riboflavin	1.6	0.7	1.2	0.2	1.5	n.s
Niacin	12.6	4.7	15.1	3.5	1.3	n.s
Vitamin B6	1.8	2.6	0.9	0.2	1.0	n.s
Folate	114.6	39.6	138.9	29.2	1.6	n.s
Vitamin B12	2.4	1.0	2.2	0.7	0.4	n.s
Vitamin C	81.8	55.9	130.4	77.8	1.6	n.s
Vitamin D	0.9	0.7	1.0	0.5	0.6	n.s
Vitamin E	3.5	1.2	4.5	2.1	1.2	n.s

Figure 3.

Mean micro nutrient intake for the case and control children, expressed as percentages of the Recommended Dietary Intake.

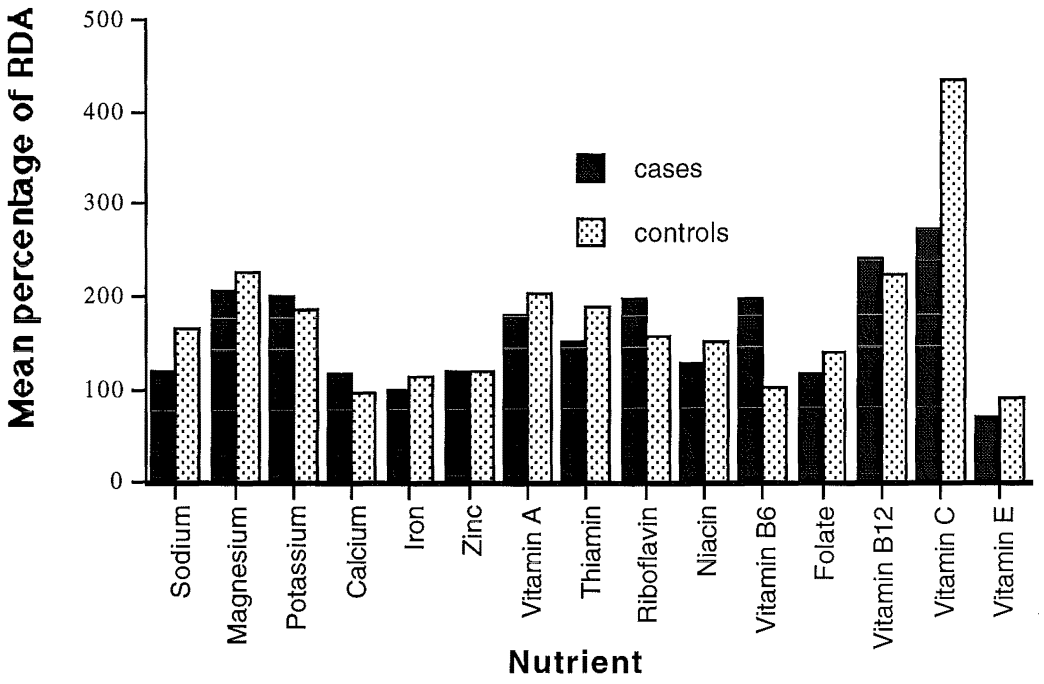


Figure 4.

Mean energy intakes of case and control children (in Kilo joules)
Calories)

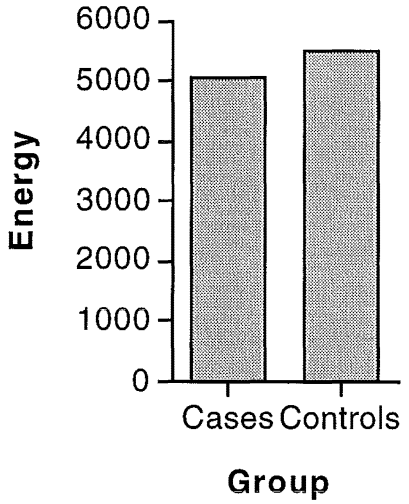


Figure 5.

Mean cholesterol intakes of case and control children (in mg per 1000

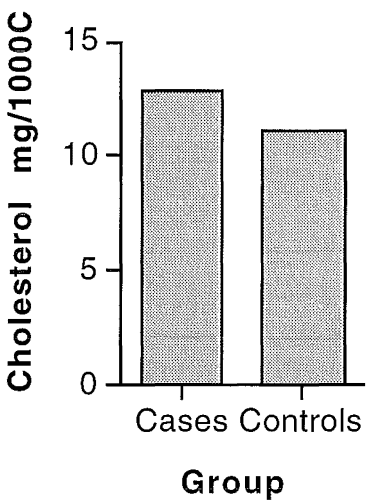


Figure 6.

Mean fibre intakes of case and control and of case children (in grams per 1000 Calories)

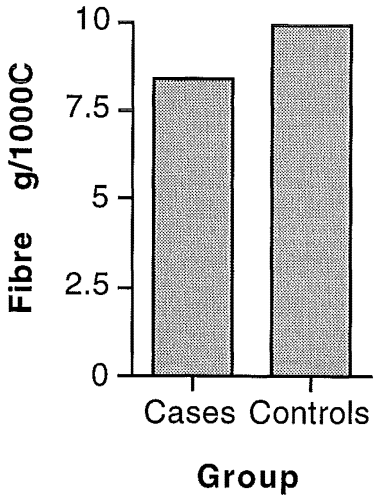
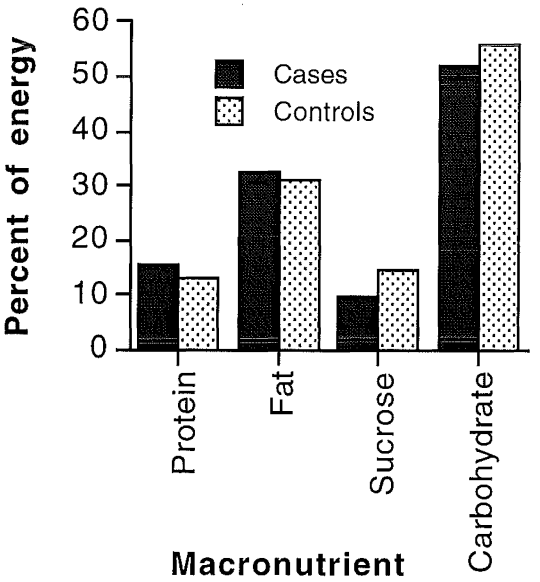


Figure 7.

Mean intakes of protein, fat, sucrose and carbohydrate in case and control children (as percentage of energy).



Recommended Dietary Intakes of individual children

While the mean intakes of the case and control groups did not differ significantly for many nutrients, mean values concealed many deficiencies in the diets of individual children in both the case and control groups. Table 17 gives a breakdown of the numbers of each group that either exceeded the recommended dietary intake for micro nutrients, fell between it and the 2/3rds mark, or fell below the 2/3rds mark. All subjects in the control group and 7 in the case group exceeded the maximum daily intake of sodium (salt), and a sizeable number in both groups (3 and 5 respectively) fell below the minimum dietary allowance for iron and vitamin E.

Macro nutrients are displayed in Table 18, and show similar numbers of both case and control children exceeding, meeting or falling below the guidelines for children.

Table 17.

Micro nutrient intakes for case and control children compared to the Recommended Dietary Intakes for children aged 1 to 3 years (inclusively).

Nutrient - RDI	Below	Above RDI	Between RDI and 2/3rds	2/3rds of RDI
Sodium - 320-1150mg	Cases	7*	3**	0
	Controls	10*	0	0
Magnesium - 80mg	Cases	10	0	0
	Controls	10	0	0
Potassium - 980-2730mg	Cases	0	10**	0
	Controls	0	10**	0
Calcium - 700mg	Cases	5	4	1
	Controls	6	2	2
Iron - 6-8mg	Cases	1*	4**	5
	Controls	2*	5**	3

Table 17 continues...

Table 17 (cont.)

Micro nutrient intakes for case and control children compared to the Recommended Dietary Intakes for children aged 1 to 3 years (inclusively).

Nutrient - RDI RDI		Above RDI	Between RDI and 2/3rds	Below 2/3rds of
Zinc - 4.5mg	Cases	6	4	0
	Controls	10	0	0
Vitamin A - 300μg	Cases	9	1	0
	Controls	10	0	0
Thiamin - 0.5mg	Cases	10	0	0
	Controls	10	0	0
Riboflavin - 0.8mg	Cases	10	0	0
	Controls	10	0	0
Niacin - 10mg	Cases	7	1	2
	Controls	9	1	0
Vitamin B6 - 0.6-0.9μg	Cases	3*	7**	0
	Controls	4*	5**	1
Folate - 100μg	Cases	7	2	1
	Controls	9	1	0
Vitamin B12 - 1.0μg	Cases	10	0	0
	Controls	9	1	0
Vitamin C - 30mg	Cases	7	2	1
	Controls	10	0	0
Vitamin E - 5.0mg	Cases	0	5	5
	Controls	3	4	3

* Exceed the recommended maximum

** Within the daily recommended range

Table 10.

Macro nutrient intakes for case and control children compared to the Recommended Dietary Intakes for children aged 1 to 3 years (inclusively).

Nutrient - RDI		Above Maximum	Within Range	Below Minimum
Protein - 12-15%	Cases	5	3	2
	Controls	3	3	4
Fat - 30-35%	Cases	4	3	3
	Controls	1	7	2
Carbohydrates - 45-60%	Cases	1	6	3
	Controls	2	8	0
Sucrose - ≤ 15%	Cases	1	9	-
	Controls	4	6	-
Cholesterol - ≤100gm/1000kC	Cases	6	4	-
	Controls	4	6	-
Fibre - 10-15gm/1000kC	Cases	1	4	5
	Controls	3	5	2

3.6. MEALTIME OBSERVATION SCHEDULE

Due to the small numbers in many of the categories for the child behaviours the following categories were collapsed in the following ways (those not mentioned remained the same):

MOS Child Category:	Collapsed Category Name:
Request for Food (RQ) Food Preparation (FP)	Prepare
Self Bite (SB) Prompted Bite (PB) Chew (CH)	Eat
Food Refusal (FR) Vomit (VO)	Refuse Food
Playing with food (PL) Leaving the table (LT) Holding Food (HF)	Non-productive Behaviour
Non-Compliance (NC) Complaint (CP) Aversive Demand (AD) Physical Negative (PN) Oppositional Behaviour (OP)	Misbehaviour

The mothers had very low rates of any negative behaviours and hence all the negative behaviours were collapsed into one category labelled "mother negative". Similarly "Specific Instructions", Vague Instructions" and "Prompts" were collapsed into one category "Instructions".

An interrater reliability check was carried out on ten of the 20 videos by an independent analyst. The average agreement rates for the major summary scores (the average of the collapsed category scores) are given in Table 19.

Table 19.

Interrater reliability of Mealtime Observation Schedule Behaviour Categories

Category	Average % Agreement	Range
Child Behaviour		
Bite Rate	94	88 - 100
Prepare	94	80 - 100
Eat	92	80 - 98
Refuse Food	96	75 - 100
Non productive Behaviour	90	75 - 100
Misbehaviour	95	67 - 100
Appropriate Verbal Interaction	92	75 - 100
Engaged Activity	90	67 - 100
Mother Behaviour		
Praise	92	75 - 100
Contact	97	90 - 100
Instruct	93	72 - 100
Eating Comments	94	67 - 100
Present Food	92	67 - 100
Remove Food	100	100 - 100
Social Attention	93	83 - 100
All Negative	100	100 - 100
Non Interaction	95	75 - 100

The mean percentage of intervals in which any negative child behaviour occurred and those in which only positive child behaviour occurred are shown in Figure 8. Similarly the mean percentage behaviour in which any negative mother behaviour, only positive mother behaviour, or Non-interaction occurred are shown in Figure 9. Figures 10 and 11, show the mean bite rate per minute for the case and control children and the mean duration of the meals. The means for the case and

control groups are shown for each category of mother behaviour (Figure 12, Table 20) and child behaviour (Figure 13, Table 21). The only category in which there was a statistically significant difference between the control and case groups was the mother's positive eating comments. The control mothers made significantly more positive eating comments than the case mothers [$t(18) = 2.99$, $p > 0.01$], making comments such as "this is yummy kumara soup", "this celery is very crunchy", "tasty noodles aren't they", "yum, do they taste nice?". They also tended to be more negative, although this was not different at the 0.05 level of significance [$t(18) = 2.0$, $p < 0.06$).

Figure 8.

Mean percentage of intervals for positive and negative child behaviours.

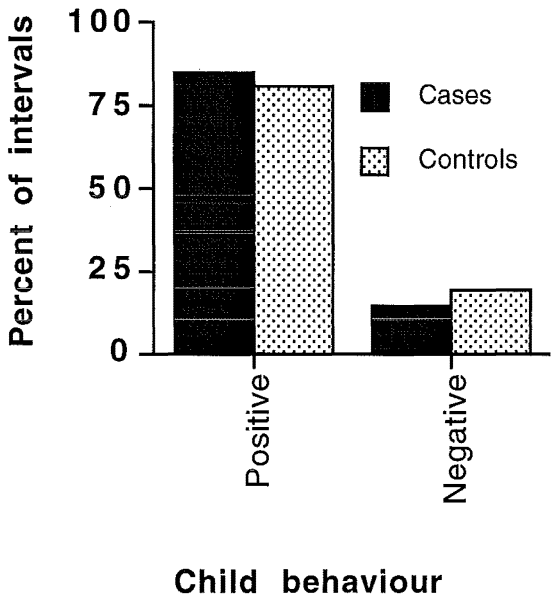


Figure 9.

Mean percentage of intervals for positive or negative mother behaviour or non-interaction.

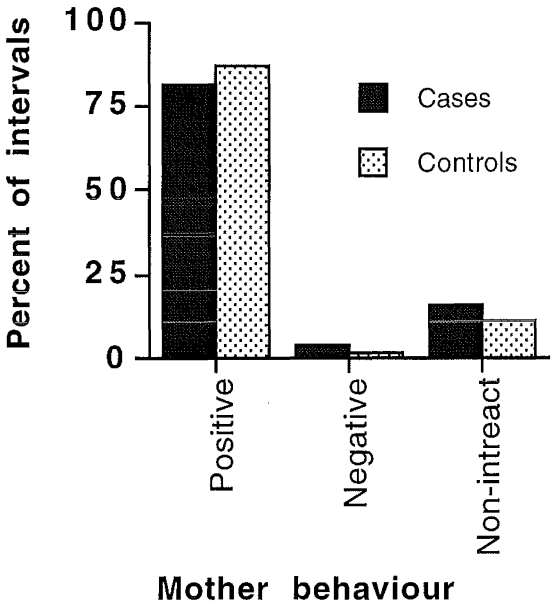


Figure 10.

Mean number of bites per minute by case and control children.

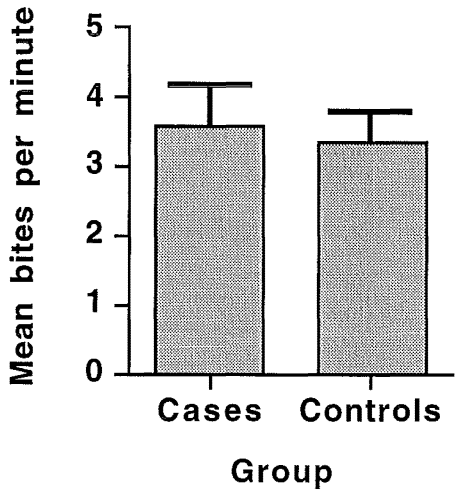
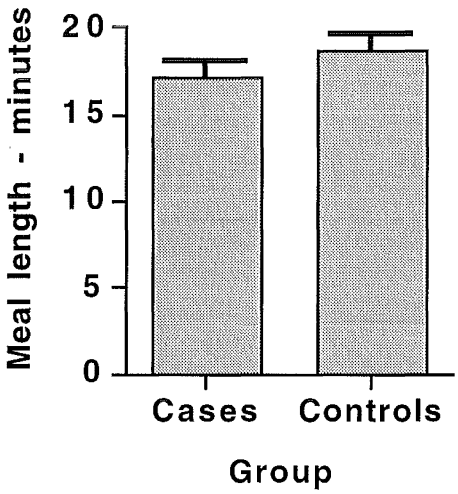


Figure 11.

Mean length of meal in minutes for case and control children.



A discriminant function analysis was performed on the child behaviour categories and the parent behaviour categories separately. Prepare, nonproductive behaviour, engaged activity and misbehaviour were found to discriminate the best of the childhood categories, correctly discriminating 70% of the control children and 90% of the case children (Pearson's χ^2 (1) = 7.5; $p < 0.01$) . The case children spent more time engaged in misbehaviour, and in engaged activity, and less time playing and preparing food, although none of these categories was significantly different on its own.

Figure 12.

Mean percentage of intervals, and standard error of the mean, containing each child behaviour category.

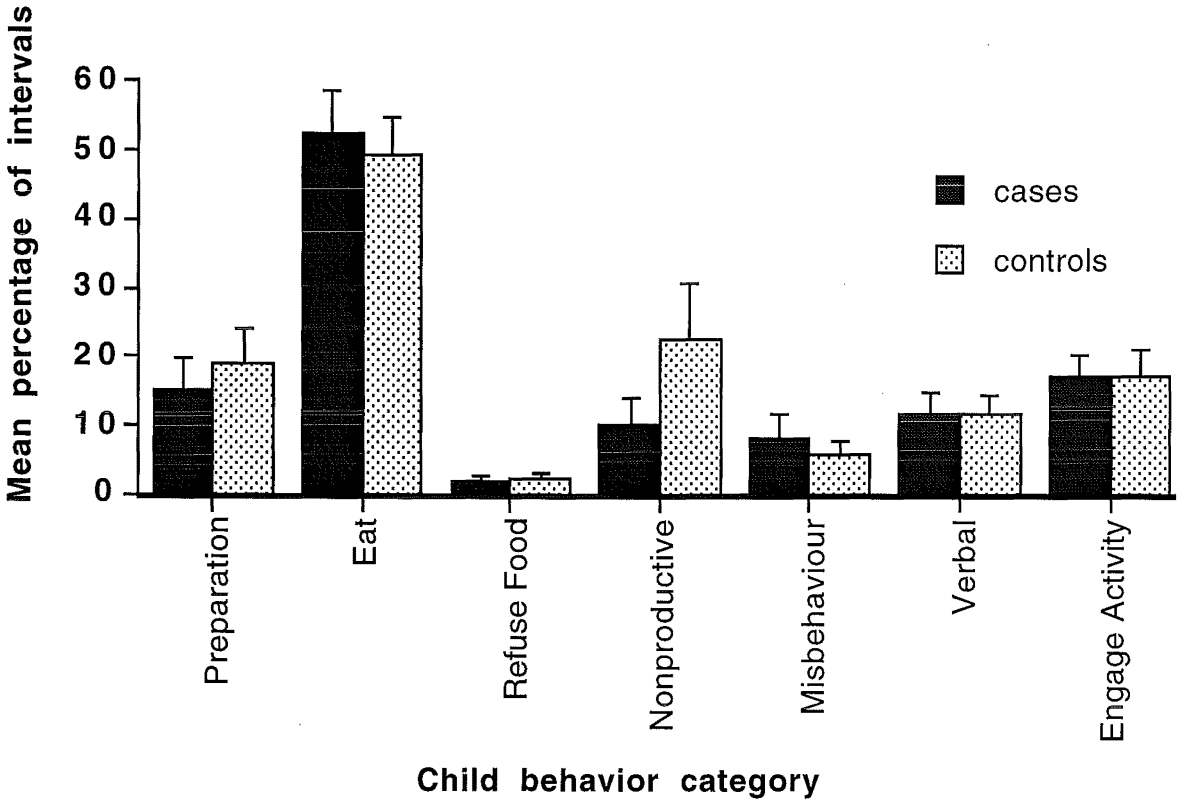


Table 20.

Mean Percentage of Intervals and Standard Deviations, for the child behaviour categories of the Mealtime Observation Schedule

	Case Children (N = 10)		Control Children (N = 10)			
Category	Mean	SD	Mean	SD	t-score	p <
Preparation	15.2	14.0	18.8	16.4	0.5	n.s
Eat	52.3	20.0	49.0	17.3	0.4	n.s
Refuse Food	2.0	2.6	2.4	2.0	0.3	n.s
Nonproductive	9.9	12.8	22.6	25.9	1.4	n.s
Misbehaviour	7.9	11.4	5.8	5.4	0.5	n.s
Appropriate Verbal	11.4	10.1	11.5	9.1	0.02	n.s
Engaged Activity	17.1	10.1	17.0	13.0	0.02	n.s

'Present food' was a strong discriminator between groups, however this was removed from the discriminant function analysis as the different rates of PF were accounted for by the number of case mothers who spoon fed their children. Four of the case mothers had children less than 18 months old who still required spoon feeding, as opposed to only 2 of the control mothers, and therefore the rate of the category PF was considerably higher in the case group. Similarly the amount of contact between mother and child was in part the result of the age of the child, and how much the mother presented food (for example PF and CO correlated at [$r = .55$, $p < 0.05$]). Thus it's discriminatory power is also questionable. It was noted however, that two case mothers who scored high (30% and 19% of the total intervals respectively) on the contact variable were holding their child's hands away from the food. This was not in a rough or aversive manner (and hence was not scored as negative contact), but did not allow the child to touch the food, or self-feed

in any way. One mother in particular made comments about the "mess" and held a cloth in her hand during the entire lunch, wiping her child's face and tray of his high chair as soon as food spilt. None of the control mothers did this, however only 2 of the control children were still being spoon-fed.

Figure 13.

Mean percentage of intervals (and standard error of the mean) containing each mother behaviour category.

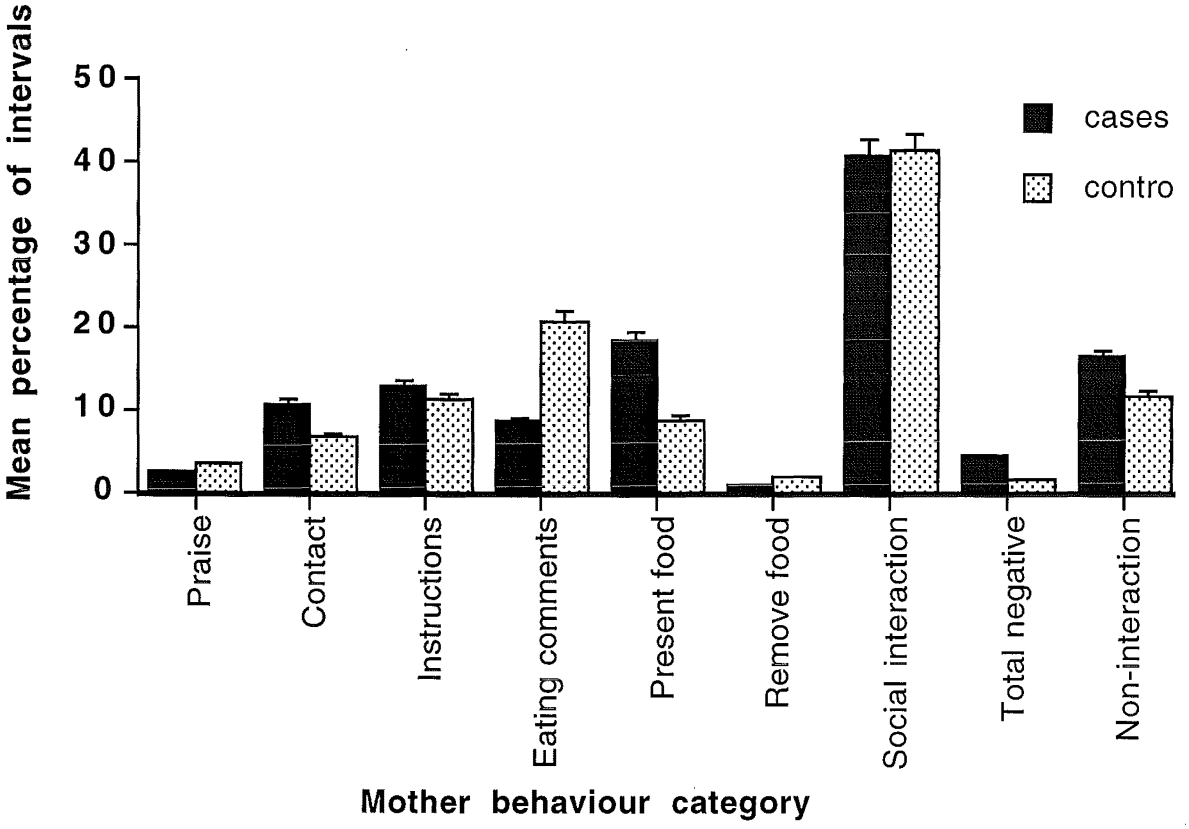


Table 21.

Mean Percentage of Intervals and Standard Deviations, for the mother behaviour categories of the Mealtime Observation Schedule

	Case Mothers (N = 10)		Control Mothers (N = 10)			
Category	Mean	SD	Mean	SD	t-score	p <
Praise	2.4	2.2	3.6	4.6	0.7	n.s
Contact	10.8	12.0	6.7	6.4	0.9	n.s
Instructions	12.9	11.0	11.2	6.1	0.4	n.s
Eating Comments	8.6	4.7	20.8	12.0	3.0	0.01
Present Food	18.5	24.6	8.7	7.7	1.2	n.s
Remove Food	1.3	1.8	1.8	2.3	0.5	n.s
Social Attention	40.6	22.2	41.4	25.5	0.1	n.s
Total Negative	4.4	3.7	1.7	2.3	2.0	n.s
Non-Interaction	16.3	21.1	11.5	15.0	0.6	n.s

As would be expected from the statistically significant difference between the two groups in terms of eating comments, eating comments discriminated well between the two groups when combined with either instruct or Non interaction (both achieved Pearson's χ^2 (1) = 7.5; $p < 0.005$) correctly classifying 70% of control mothers, and 90% of case mothers. It also discriminated well with either Mother negative, or contact (both achieved Pearson's χ^2 (1) = 5.05, $p < 0.05$), when they correctly classified 70% of control mothers, and 80% of case mothers. Within these categories the case mothers tended to give more instructions, to have more contact with their children (although this was partly due to the effect of more case mothers still spoon feeding), to spend less time interacting with their children, and to demonstrate more negative behaviours than the control mothers. Once both EC and

PF were removed from the discriminant function analysis however, the other 7 variables (mother Negative, Instructions, PR, CO, RF, SA and NI) failed to discriminate significantly between the two groups.

The Mealtime Observation Schedule also allows for a recording to be made of the mother and child affect during the meal, specifically whether their affect is anxious, depressed or angry. None of these affect codes were coded for any of the mothers or children in either group. While not actually part of the Mealtime Observation Schedule, it was also recorded if the mother ate her own lunch while her child ate. Six control mothers ate with their child as compared to only two case mothers.

3.7. POWER ANALYSIS

A retrospective power analysis was carried out for a range of variables in order to determine the 'least significant number' of subjects needed to gain a significant result at the alpha level of 0.05. This was done so as to ascertain any areas of particular importance for future research. In terms of the developmental milestones, it was found that a sample size of 25 could provide a significant result for both 'crawl' and 'walk'. On the Toddler Temperament Scale, the categories of activity, rhythmicity, adaptability, and intensity, all needed a sample size of between 50 and one hundred, the other scales needing greater than 100 subjects. A sample size of between 30 and 50 would be needed for a significant difference between the childrens' intakes of the nutrients protein, carbohydrate, sucrose, calcium, riboflavin, niacin, folate, and vitamin C; and between 50 and 100 for fibre, magnesium, vitamin B6, and vitamin E. Finally on the Mealtime Observation Schedule, only 22 subjects would have been needed to gain a significant difference in the amount of 'Mother Negative' behaviour; and 42 for the child behaviour category 'Play'. All other categories required more than 100 subjects to gain a significant difference at the $p < 0.05$ level.

4.0. DISCUSSION

4.1. EXPLANATION OF THE RESULTS

Overall the current study revealed only a few significant differences between control mothers and case mothers and their children. These differences shall first be discussed in relation to each variable investigated, followed by an overall discussion of the results.

4.1.1. Characteristics of the Mothers and Their Children.

The mothers did not differ significantly on any of their demographic features, despite the control mothers being included only on the basis of their child's age and sex. In particular the case mothers were not older at the birth of the target child, did not have a different number of children, nor had any of them divorced in the past, or were currently separated from the child's father. This is in contrast with Brinch, et al.'s (1988) study which found that mothers with a history of anorexia nervosa had their children later than average; and with Woodside and Shekter-Wolfson (1990) who reported high rates of marital pathology in their group of mothers with eating disorders.

4.1.2. Health and Development

The only difference of note between case mothers and control mothers during their pregnancy's was the high number of case mothers who totally abstained from alcohol during their pregnancy. This may reflect a greater awareness of health issues; however, as pre-pregnancy alcohol intake was not assessed it may merely be a reflection of existing drinking patterns (many women may already abstain due to the high caloric content of alcohol for example). The finding is also important given the high rates of alcohol use often reported in individuals with an eating disorder, (Bulik, 1987; Herzog, 1982; Piran et al., 1985).

An important finding to emerge from the present study was that the case children were lighter and shorter at birth than the control children. That these differences in both weight and height had disappeared by the time the children were 3 months old, suggests that their prenatal environment may have influenced their size at birth. Treasure and Russell (1988) also reported "catch up" growth in the neonatal period of their sample of children of mothers with an eating disorder. Unfortunately the mothers in the current study were not questioned concerning their weight gain or presence of eating pathology during their pregnancy. However this finding is concordant with the findings that women with an eating disorder do tend to have low birth weight children (Brinch, et al., 1988; Treasure & Russell, 1988). Importantly however, all children appear to have grown well since birth. In light of the literature concerning cases of failure to thrive and retarded growth in the children of women with an eating disorder this finding is particularly important (Brinch, et al., 1988; Scourfield, 1995; Smith & Hanson, 1972; Stein & Fairburn, 1989; van Wezel-Meijler & Wit, 1989). However overall the pattern of growth found in the current study is contrary to that of the children studied by Stein, et al. (1994). They reported that the index children were lighter at the time of assessment than the control children but that there was no difference in the birth weights of the two groups.

Few differences emerged in other aspects of development examined in the current study. Given the research which suggests more stress, particularly parental loss, in the lives of women with an eating disorder (Rastam & Gillberg, 1992; Schmidt, et al., 1992; Schmidt, et al., 1993), it was important to note few differences in the number of 'stressful events' the two groups of children had experienced. Interestingly four of the control children had experienced the death of a family member (grand- or great-grand-parent) in contrast to the case children where none had expereinced such an event. Only one of the case children had experienced parental loss, in the form of being separated from her mother on two occasions for 3 to 4 months at a time.

The case children as a group tended to reach their developmental milestones at a later age than the control children. The only other study to have looked at the development of children of women with eating disorders was Stein, et al. (1994). Using a standardised developmental assessment with a larger group of children they found no differences between the children of eating disorder mothers and those of control mothers when the children were aged about 12 months old. This would be an interesting area to pursue, particularly given the power analysis findings that with a larger sample significant differences may be found between case and control children in their achivement of some developmental milestones.

Infant feeding

The difficulties with breast feeding often experienced by women with an eating disorder reported in other studies (Brinch, et al., 1988; Evans & le Grange, 1995; Lacey & Smith, 1987; Stein & Fairburn, 1989; Treasure & Russell, 1988) was true for four of the case mothers in the present study. All control mothers breast fed their infants as opposed to six case mothers, unlike the findings of Evans and le Grange (1995) who reported equal numbers of case and control mothers who breast fed. Interestingly, two case mothers cited "embarrassment" as their reason for not breast feeding. While this is perhaps not surprising considering the physical nature of breast feeding and the difficulties with body image and self-focused attention, faced by many women with an eating disorder, this is a considerably higher rate than that of Lacey and Smith (1987) who had only 2 of 43 mothers with AN give 'preference' reasons. However the six case mothers who breast fed did so for a slightly longer average time than the control mothers as a group, perhaps a reflection in these mothers of the 'positive attitude' to breast feeding found by Brinch, et al. (1988) and Lacey and Smith (1987) in their mothers with an eating disorder.

4.1.3. Toddler Temperament

No significant differences emerged between the temperaments of the case children as compared with the control children. If anything the case children tended to have 'easier' temperaments than the control children. Children with 'easy' temperaments have found to not put on weight as rapidly as those with more difficult temperaments (Carey, et al., 1988), and not to survive in adverse conditions as well as those with more difficult temperaments (De Vries & Sameroff, 1984). Overall neither group of children was considerably different to the percentages of children in each category in the standardisation sample of Fullard, McDevitt and Carey (1984) , although again, the control children tended to be slightly more difficult than both the case children and the standardisation sample. Important also is that the mothers did not differ in how they themselves rated their child, for it is not only the 'innate' temperament of the child that can place him or her at risk of maladjustment, but also the way in which the mother perceives her child (Prior, 1992). Carey (1983) notes that just because a child is rated as difficult it does not necessarily suggest a stressful parent-child interaction, and the reverse is also true for children with an easy temperament.

The lack of significant differences found here between the case and control children may be a function of the young ages of the children. Temperament, as it is measured, changes over time, which suggests that the environment and the effects of maturation are influencing the developing temperamental characteristics of the child (Carey, 1985). Matheny, Wilson and Thoben (1987) found that mothers' temperament was somewhat more related to the toddlers' reported temperament at 24 months than at 12 months. They suggested that this could reflect the mother conditioning the toddler to be more like her or a maturational change that has activated inherited components of the child's temperament. Thus while the two groups were not similar now, differences may occur as they grow older, perhaps in the direction of their mothers temperament. Further investigation would be useful, both with older children, longitudinally, and with larger samples, given that

the power analysis sugested differences may occur between case and control children in larger samples.

4.1.4. Body Satisfaction

Both groups of mothers reported that their children were all as, or more, attractive than other children their age. This is concordant with other research suggesting that it is normal for parents' to make positive appraisals of their child's physical attractiveness (Felson & Reed, 1986; Striegel-Moore & Kearney-Cooke, 1994). It was interesting that the only two mothers who reported having tried to help their children change their appearance were the two mothers who indicated pathological levels on the 'Body Dissatisfaction' sub scale of the Eating Disorder Inventory. A possible explanation for this is that the mother's dissatisfaction with her child's appearance may be a reflection of her dissatisfaction with her own body.

The most concerning comment was from the mother who reported feeding her child "a little less", and this was the only mother who indicated she would like her child to have a smaller body size on the child figure drawing scales. This mother not only indicated eating pathology on the EDI but also mentioned during the interview that she had a history of depression. The finding that this mother was more dissatisfied with her child's body size and appearance than the other case mothers and control mothers may therefore not be specific to her eating disorder, and may rather be indicative of her general level of psychopathology. However, other studies on mothers with an active eating disorder have reported dissatisfaction with their child's body weight and size (Stein & Fairburn, 1989; van Wezel-Meijler & Wit, 1989), and restricting their child's food intake (Brinch, et al., 1988; Scourfield, 1995; Smith & Hanson, 1972; Stein & Fairburn, 1989; van Wezel-Meijler & Wit, 1989).

The lack of difference between the mothers' levels of satisfaction with their children's body size and appearance may be a function of the age and/or gender of the

children. Striegel-Moore & Kearney-Cooke (1994) found that the survey respondants with the youngest children reported the highest level of praise and lowest levels of criticisms of their child's physical appearance. They suggested that parent attitudes may begin to change as the child gets older. This age related change may be especially true for mothers with weight and shape concerns given that these mothers have been found to place pressure on their daughters when they are older than the children in the current study (Pike & Rodin, 1991; Thelen & Cormier, 1995; Thelen, Lawrence, & Powell, 1992).

The gender of the child may also affect how satisfied a mother is with that child's appearance. Research to date has focused primarily on the effect of mothers' attitudes to body image, weight and eating on their daughters (Attie, et al., 1990; Hall, Leibrich, Walkey, & Welch, 1986; Hill, et al., 1990; Levine, et al., 1994; Pike & Rodin, 1991; Ruther & Richman, 1993; Striegel-Moore & Kearney-Cooke, 1994; Thelen & Cormier, 1995), and few have looked at the effect on sons. It may therefore be that mothers only have these concerns for their daughters. Thelen and Cormier (1995) reported that mothers are more likely to show concern for, and restrict the food intake of, their overweight daughters than overweight sons. While Striegel-Moore and Kearney-Cooke (1994) found that despite boys having a higher BMI in their study, parents reported that their daughters were fatter than their sons. These authors concluded that parents may compare their daughters more than their sons to an unrealistically thin ideal. Furthermore Ruther and Richman (1993) found that while mothers eating restraint was related to their daughters eating restraint, there was no such relationship between mothers and sons.

An area of future investigation may well be to compare larger groups of sons and daughters of mothers with an eating disorder, not only with a control group but also with each other, in order to determine if these mothers hold concerns specifically for their daughters. How this interacts with the ages of the children would also be an interesting aspect to pursue.

4.1.5. Attitudes Towards Nutrition

The nutrition questionnaire essentially has three components, one concerning the degree of control a mother lets her child have over his or her food choices (such as "I let my child choose whatever he/she wants for breakfast"), another regarding the degree of concern a mother shows for her child's diet and nutrition (such as "the type of food one eats is important, and one should not be careless about it"); and a last section pertaining to how much others influence what a mother feeds her child (such as "my doctor's attitudes to food affect what I give my children"). These three aspects have not been formally separated or analysed and hence have only face validity, in that they appear on the surface to form three distinct components. From the research outlined earlier it is possible to hypothesise that mothers with an eating disorder could differ from mothers without one, on each of these three components.

In terms of control over food intake, the whole concept of an eating disorder indicates issues with control over food (DSM-IV, 1994). Similarly differences have been found in the concern women show in their diets. Women with BN have been found to show a preference for "healthy foods" when not bingeing (Gendall, et al., 1996; Kaye, et al., 1992; Rodin & Reed, 1988), but a preference for "junk" foods when bingeing (Rodin & Reed, 1988; Weltzin, et al., 1991). In terms of the influence of others, Evans and le Grange (1995) also noted that the mothers in their study stuck rigidly to the feeding guidelines recommended by their health professionals when feeding their children.

Despite these other research findings however, no differences were found in the current study between control mothers and case mothers in terms of their patterns of consensus on any of the questions. This again could be a result of most of the mothers not appearing to have an active eating disorder. However it may also be due to a biased response in these mothers, the answer selected by the mothers may have been chosen as a result of what the mothers thought was the "appropriate" response rather than their true

attitudes. Differences have been found in the eating behaviour of women with an eating disorder even after treatment (Elmore & de Castro, 1991; Wilson, et al., 1989), and this difference may also be reflected in their attitude towards the nutrition of their children. It would be interesting to utilise a questionnaire, such as that used here, with a more 'disordered' group of mothers (and if possible to make responses anonymous so as to, in part, counter the respone bias effect) in order to discern if any differences were present, particularly on the issues of control and concern over their children's food and nutrition. This is particularly true in light of the concerns other studies have found in the growth retardation and underfeeding of the children of women with an eating disorder (Brinch, et al., 1988; Scourfield, 1995; Smith & Hanson, 1972; Stein & Fairburn, 1989; Treasure & Russell, 1988; van Wezel-Meijler & Wit, 1989)

Women with an active eating disorder have been found to use food for non-nutritive reasons, such as to punish or comfort their child (Lacey & Smith, 1987), and it would be interesting to explore this area in more depth. This is particularly so given that it has been hypothesised that women with eating disorders, especially those with bulimia, may themselves use food as a source of comfort (Abraham & Beumont, 1982; Dare & Crowther, 1995). The only question in the current study to tap this area was that which asked "I do give children food or drink to stop them crying", where case mothers and control mothers had a similar pattern of responding.

On a few questions in the nutrition questionnaire, the pattern of consensus for both case mothers and control mothers was opposite to that of the comparison group of 106 parents surveyed by Campbell (1995). This may be due to true differences in the populations, as the parents in Campbells' study were from a predominantly rural area. Or it may perhaps be a reflection of the inclusion of both mothers and fathers (numbers not reported) in Campbell's survey, and fathers may perhaps show different attitudes towards food and nutrition than do mothers. Alternatively it may reflect the way in which a small number of subjects (such as the ten used in this study) may not be representative of the larger population.

4.1.6. Food Diary

Given the small numbers of subjects, it was interesting to find that the case children consumed significantly less sodium and thiamin than did the control children. Thiamin is one of the B group vitamins, and is found in a wide range of foods, particularly meat, legumes and vegetables (Whitney, Hamilton, & Rolfes, 1995). A deficit in thiamin can reflect a restricted calorie diet. However none of the case children were actually deficient in their intakes (defined by consuming less than two-thirds of the RDI for Thiamin), nor were their total energy intakes different. Sodium is present in many foods, particularly "junk" foods, or highly processed foods (Whitney, et al., 1995). The lower mean sodium intake of the case children may therefore suggest that the case children were consuming less of these foods than the control children. However highly processed "junk" foods are also often low in potassium, and high in sugar, and while the diets of the control children were lower in potassium, the case children as a group consumed greater amounts of sucrose than the control chidlren.

Overall it is difficult to form any conclusions regarding any differences in the diets of the case children in comparison to the control children. It is possible that the two significant differences found may reflect the error introduced by making multiple statistical comparisons (see section 2.3.1). However the power analysis suggested that the children's intakes of many other nutrients may have been statistically different if a larger sample had been used. Nutritional deficiencies can have important implications for the health and development of children (Whitney, et al., 1995), and given the research suggesting differences in the diets and nutritional status of women with eating disorders, the children of these women are at risk. Therefore, the diet analysis of children of women with an eating disorder is an important avenue for future research.

One interesting comparison is the study of Kintner, Boss, and Johnson (1981). They found that in families high in conflict, control and organisation the members often had poor diets. The above discussion on the interaction patterns of women with eating disorders suggests that the families of women with eating disorders often differ from controls in these domains. One could hypothesise that if the families of the children in the current study were characterised by this pattern (high conflict, control and organisation), the children's diets would also be poor. That this was not the case here, does have implications for the family environments of the children studied, given Kintner, et al.'s (1981) findings.

The dietary intakes of each of the children were also compared with the recommended daily intakes for children aged one to three years. While the rates of case children and control children who were below the healthy level of two-thirds of the RDI did not differ significantly, it was surprising the number of children who were below this cut-off level for a number of nutrients. Almost all children consumed excessive amounts of sodium, and eight of the twenty children consumed insufficient iron*. Campbell (1995) also found a high rate of insufficient iron intake in her sample of 17 children aged 12- to 18-months. In terms of the macro nutrients, many children's diets revealed intakes either above or below the recommended levels. Overall it would appear that many of the children studied here may not be receiving as balanced a diet as would be desired, perhaps reflecting a lack of knowledge in parents regarding appropriate diets for children - a finding not restricted to the mothers with a history of an eating disorder.

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* While eight children were also below the RDA for Vitamin E this may not be a true reflection of overall intake. Vitamin E is stored in the body and a longer record than the three days used in the current study is needed to reflect true intake (Whitney, et al., 1995).

4.1.7. Mealtime Observation

An important finding to emerge from the present study was the greater number of positive eating comments made by control mothers than by case mothers. The category definition of positive eating comments is "any general comment or question related to the current meal, or eating or food in general, that is presented non-aversively..." (Sanders & Le Grice, 1989, p.4). Hence it appears that case mothers in this study made fewer references to food and eating than did control mothers, which may represent a cognitive avoidance of the feeding context. The eating comments of control mothers tended to refer mainly to the 'deliciousness' of the food, particularly how "yummy" it was, and the positive qualities of the food, such as the "crunchy apple". Furthermore it was found using discriminant function analysis that the majority of case mothers could be differentiated from control mothers on the basis of the number of eating comments they made and the amount of time they were not interacting with their children. In the majority of cases "non-interaction" was scored when the mother was physically absent from the child, such as in another room. This may represent a more concrete way of avoiding the feeding context with the child.

It was also interesting to note that considerably more control mothers ate their lunch with their children than did case mothers. This is in line with other research (Evans & le Grange, 1995; Scourfield, 1995; van Wezel-Meijler & Wit, 1989; Woodside & Shekter-Wolfson, 1990) reporting that many parents with eating disorders do not eat in front of their children. This lack of 'shared lunches' may provide further evidence for an avoidance of the food context with their children. However this finding is only specific to the lunch time under observation as the mothers were not asked about their usual mealtime situation. It may well be that the mothers with an eating disorder were particularly "camera shy" (a possibility not unlikely given the dislike of self-focused attention common in women with an eating disorder) and would usually eat with their children but did not do so during this video taped meal.

The discriminant function analysis also showed that when combined with eating comments, the number of instructions the mothers gave successfully discriminated the two groups of mothers in the majority of cases. That the case mothers gave more instructions than the control mothers during the meal, may indicate a higher degree of control used by the former group. Stein et al. (1994) found their index mothers (using a different instrument to that used here) to be more controlling during a play time but not the mealtime, as indicated by the number of controlling statements they expressed. An increased need for control by two case mothers in the current study may also be hypothesised from their restriction on their child's self feeding, to the point of restraining their child's hands. Stein et al. (1994), reported that almost half the episodes of the mother's negative expressed emotion were preceded by the mother's perception of mess on the part of her child. Unfortunately the schedule used in the current study did not allow for a detailed analysis such as this to be made. Given Birch et al.'s (1995) finding that a high degree of parental control in the feeding context can impair the child's ability to monitor their own hunger and satiety cues, and that women with eating disorders often have difficulties in these areas; this aspect of the amount of control a mother exerts on her child is an important one to be considered in future research with mothers with an eating disorder.

The case mothers also tended to be more negative, again concordant with Stein et al.s' finding that negative expressed emotion was more fequent among their index mothers during the meal time. The rates of negative behaviour in each category were too low to enable an individual analysis of the way in which case mothers were more negative. Future reserach with a larger sample would both redress this issue and help determine thesignificance of the mothers negative behaviour.

The case children and control children did not differ in any significant way. Even the discriminant function analysis needed preparation, non-productive activity, engaged activity and misbehaviour to discriminant the two groups successfully. This overall lack of major differences between the two groups of children was also found by Stein et al.

(1994) who reported no differences between groups in their levels of vocal utterances or activity. They did however find that their case infants were less cheerful than the control children. A negative affect (anxiety, depression or anger) was not noted in either the case children or control children in the current study, although the instrument utilised here was not as sensitive to child mood as that employed by Stein et al. (1994).

No difference was found in the bite rate of case children and control children in the current study. A higher bite rate is found in obese individuals, and women with bulimia nervosa often have high rates of familial obesity. Accounts of the eating patterns of women with eating disorders have also noted either abnormally slow or abnormally fast rates of eating (Abraham & Beumont, 1982; Hetherington, 1993; Hetherington, et al., 1993; Kissileff, et al., 1986; Mitchell, et al., 1981; Rosen, et al., 1986; Wilson, et al., 1989). However the finding in the current study is not conclusive due to both AN and BN mothers being included and not separately analysed.

There are a number of positive conclusions to be drawn from this analysis of mealtime interaction. Firstly, the amount of positive social attention the mothers gave their children was very similar, and both case children and control children had a similar number of appropriate verbal interactions. This finding has implications regarding the mothers usual interaction with their children. Depressed mothers and their children have been found to speak less with each other than do non depressed mothers and children, particularly while eating lunch together (Breznitz & Sherman, 1987). Given the high rates of depression often concomitant in women with eating disorders, the similar level of verbal interaction in the children in the current study is a positive one. Furthermore the rates of child misbehaviour and mother negatives, both of which are indicative of feeding problems (Sanders, Patel, Le Grice, & Shepherd, 1993), were very low in the current study. This is particularly so given that feeding problems, such as mealtime fights, have been found to be a risk factor for developing bulimia nervosa later in life (Marchi & Cohen, 1990).

4.1.8. General Discussion

The current study has demonstrated some important differences between case and control mothers and their children. However, there are many other differences reported in the literature and the reasons why perhaps more differences were not found here need to be elucidated. Firstly, and perhaps of most importance, is the issue of the status of the women's eating disorder. Only two mothers in the current study reported levels of pathology indicative of a current eating disorder according to the EDI, and all case mothers had been through a treatment programme for their eating disorder, bar one who was receiving treatment at the time of the study. However no information other than the EDI was gleaned from the mothers regarding the level of the eating pathology prior to or during their pregnancy, and during the child's life. All the research discussed above described women with an active eating disorder while either pregnant or during their child's life. Only Brinch, et al. (1988) studied women with a former diagnosis and variable status of their eating disorder at follow-up. While they found a lower birth weight and higher perinatal mortality in the infants of mothers with AN than in the background population, Brinch, et al. (1988) reported few differences in the mental state of the mothers or their children in comparison with expected rates.

The gender of the children may also influence the findings, this is particularly so for the body satisfaction findings, as discussed under this section above. However gender may play a role in determining both the characteristics of the children and may, perhaps through a process of identification with her daughter, affect how a mother interacts with that child. Given the exceedingly low rates of eating disorders in men, few studies are completed on the factors that contribute to the risk of a male developing an eating disorder. Therefore boys may not possess, or be exposed to, as many of the risk factors for an eating disorder as girls may be. For instance the research examining the role of temperament in eating disorders has only studied women, so it is unknown if men have the same pattern of temperament. Mothers with an eating disorder may also interact differently with their sons than their daughters in regards to food, underfeeding one but

not the other (Scourfield, 1995; Smith & Hanson, 1972; Stein & Fairburn, 1989; van Wezel-Meijler & Wit, 1989). Due to the small sample size in the current study however, with only five boys and five girls in each group, it was not viable to determine statistically if a sex difference existed.

Finally the age of the children may well have affected the differences (or lack of them) between the control and case groups. Given that eating disorders, particularly anorexia nervosa, most often begin in adolescence, they can be understood within a developmental perspective. Consequently, between the toddler years and when an eating disorder actually emerges, a child will undergo many changes, which may or may not predispose her/him to an eating disorder. This issue has already been discussed in relation to the temperament of the individual child. However the way in which the mother interacts with her child, particularly in the domain of food and eating, may also alter as her child grows. In this way the child's age may also interact with her or his gender. However it is reassuring that within the present group, at this early age, there were few obvious differences.

4.2. STRENGTHS AND LIMITATIONS OF THE CURRENT STUDY

There are a number of limitations of the current study which need to be borne in mind when interpreting the results. The most important of these is the small sample number and the unknown details of the mothers' eating disorders, both of which limit the generalisability of the findings. There are a number of different forms of an eating disorder, including AN restrictor type, AN binge/purge type, and normal weight BN with and without a history of AN. The exact diagnosis of each woman was not ascertained, nor was the status of her eating disorder before and during her pregnancy, and during her child's life time obtained. While the decision was made not to seek this information from the outset (as discussed in section 1.3.), this information certainly would have provided more insight into the nature of influence the mother's eating disorder has on her child. This is particularly so given the differences between AN and BN. In most areas

investigated within this study, the literature suggests women with a major diagnosis of either AN or BN often have quite different presentations. For instance, women with RAN show extreme control over their food intake, while those with BN, when bingeing, show out-of-control behaviour around food. Similarly the patterns of temperament found in women with eating disorders are often quite specific to their diagnostic cluster (Bulik, et al., 1995). Therefore it may be possible that in combining the individual results into a group composite mean, important differences may have effectively cancelled each other out. This will not be possible to determine however until larger groups are used, and more detailed information about the mothers eating disorder symptomatology is obtained.

The present sample of women may also be biased in some ways. All the women either had or were being treated for an eating disorder. This may introduce bias in terms of women who seek treatment differing from those who do not seek treatment, in terms of severity of disorder, level of motivation, and demographic variables such as education, age, living environment and so on. Furthermore, of all the women who participated in the two studies from which this sample was drawn, only those who gave their permission to be contacted for future research were contacted. This may suggest that only those who had successfully completed their treatment had given permission to be recontacted in the future. Brinch, et al. (1988) reported that many of the women contacted by them did not want to have their families involved in the investigation. In comparison only 3 of twelve women contacted from the two studies declined to take part, the rest agreed for the researcher to enter their homes and involve their children. This may indicate that the women involved in this study were all relatively healthy.

Another major limitation is the lack of involvement by the children's fathers in the current study. It is possible that the fathers had a significant role to play in many aspects of parenting, perhaps mitigating the effects of any eating disorder pathology in the mother. The differential impact of fathers may be hard to determine. However, in areas such as the child's mealtime behaviours it may be interesting to compare the way in which fathers interact with their children.

The way in which the results were analysed may have limited the information gained from the current study. In order to compare the case group and control group, the individual results were collapsed into group composite scores. While this provides valuable information in terms of power to generalise and speculate, it does lose valuable 'case-by-case' information, and hides the variation across individuals within the control group. This is of particular relevance given the small number of case mothers and their children involved in the present study.

The selection of the control group may also be somewhat of a limitation. Only three of the control mothers were selected randomly from a community sample. The rest were either friends of these three women, or known to the researcher. Wacholder, Silverman, McLaughlin, and Mandel (1992) have criticised the use of 'friends as controls' on the basis that friends tend to be similar with regard to lifestyle, and more likely to be sociable people. However, it was interesting to note that the two groups of mothers were quite similar in a number of regards (for example education and age at first child), despite the seven non-randomly selected all being chosen on the basis of their child's age and gender.

Despite these limitations the current study also has a number of strengths. It is one of only a few studies to include a control group (Evans & le Grange, 1995; Stein, et al., 1994), and it uses a variety of measures to examine a wide range of variables pertinent to the study of the risk factors for eating disorders. A particular strong point is the use of a previously validated schedule to systematically observe and code the lunch time interaction of the mothers and their children- of which 50% were coded for reliability by a rater blind to the group of the mother. It also appears to be the first study to examine the temperamental characteristics and the nutritional intake of the children. Both are areas of growing research interest in women with existing eating disorders.

Furthermore, it is the first study to have examined children of 'toddler' age in depth. Much of the existing research has focused on the pregnancies, birth and new born period of the children of women with eating disorders, or restricted their focus to brief maternal accounts of their child's development. The toddler age is an interesting one, in that the children are beyond the entirely dependent stage of infancy, and are beginning to develop their own personalities. As the child's independence grows, particularly in the domain of food and eating, new parenting skills are needed. Such skills may pose difficulties for mothers with an eating disorder, particularly given the possibility of issues in the mothers own emotional development.

4.3. CONCLUSIONS

The current study found that the toddlers of mothers with an eating disorder weighed less, and were significantly shorter than the control children at birth, differences that disappeared by the time the children were three months old. The case mothers as a group tended to avoid references to food and eating while their children ate lunch, and also showed a tendency to physically absent themselves. Few other differences appeared in the parenting behaviour of the mothers, and no other strong differences were evident in the mealtime behaviour of the two groups of children, in the standard of their nutrition, or in their temperaments. Although these are only preliminary findings with a small sample of mothers, they have several important implications both for research and for those working with women with an eating disorder.

Considerably more research is needed with larger groups of mothers and children, including a greater diversity of ages, so that a full developmental picture of the impact of a maternal eating disorder can be obtained. Many possible areas of future research have been discussed under the relevant sections above. It would be particularly useful to complete a prospective study, following up a group such as this one through childhood, with repeated measures so as to ascertain the impact of maturation has on the variables studied here and on other relevant factors. Furthermore the present research has studied only a small number of the many possible variables, both within the child, and in terms of the way in which a mother with an eating disorder parents. Research with the offspring of parents with an eating disorder is a worthwhile area for continued examination, providing valuable information that may help prevent these at risk children from developing eating pathology themselves, but also help elucidate more general etiological factors in the development of an eating disorder.

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APPENDIX A

Summary of studies: Parents with an eating disorder and their children

CASE STUDIES

Authors	Parent Sex, Diagnosis	Children Sex, (age)	Reported problems
Fahy & Treasure (1989)			• All five pregnancies were unplanned; only one of the five had an uncomplicated pregnancy.
	F, BN-hxAN	M (2yrs)	Baby born at 38 weeks gestation, low weight; unable to breast feed; unable to cope: drug and alcohol abuse; child taken into care voluntarily.
	F, BN-hxAN	F (2yrs)	Forceps at 43 gestation; child has learning difficulties; mother has difficulty feeding child; no food in house; feeding precipitates binges; mother locks child away during binges.
	F, BN	F (1yr)	Gained 29kg during pregnancy; does not cook at home; feeding precipitates binges; feels guilty about effects on child.
	F, BN-hxAN	M (4yrs)	Unaware of pregnancy until 7 months; delivered at 33 weeks gestation, low weight; child's "left-overs" precipitates binges; very guilty about effects on child.
	F, BN	F (4yrs)	No food in house; does not cook for child; very conscious of child's weight; child sent to bedroom during binges.
Scourfield (1995)	F, AN	M (4yrs)	Born full term, normal delivery; fussy eater as child, diarrhoea; concerns about his weight gain from 1 year-old; gained weight whenever staying away from home; mother never ate with family; child showed bizarre eating behaviour; placed in foster care.
	F, AN	F (7yrs)	Adopted at 9 months; 4 brothers (biological sons of parents), two of which had failed to thrive in the past with no organic cause found; child was a fussy eater, could vomit voluntarily; was obese until few months prior to referral when she stopped eating and began to lose weight; reinitated eating in hospital but would cease to eat again after visits home; mother refused treatment for her AN, denied involvement in child's problem.
	F, AN	M (2yrs)	Normal delivery at full term; referred due to excessive preoccupation with food, according to mother; grandparents did not agree son had a problem.
Smith & Hanson (1972)	F, AN	M (2yrs)	Undernourished, battered
		F	Starved to death at 10 weeks
Stein & Fairburn (1989)			• All five women had difficulty breastfeeding.
	F, BN-hxAN	M (3yrs)	Child ignored during bulimic episodes.
	F, BN	F (1yr)	Major feeding problems; lack of food in house complicates feeding; mother unduly concerned about child's shape and weight.
	F, BN	M (3yrs)	Child ignored or punished during bulimic episodes; lack of food in house complicates feeding; mother unduly concerned about child's weight.
	F, BN	F (1yr)	Undue concern about child's shape and weight.
	F, BN	F (8yrs)	Child severely underweight with history of non-organic failure to thrive; school phobia; child ignored or punished during bulimic episodes.
		M (6yrs)	Severe obesity.

Appendix A continues.....

APPENDIX A continues

Authors	Parent of Sex, Diagnosis	Children Sex, (age)	Reported problems
van Wezel-Meijler & Wit (1989)	F, AN	F (1yr)	Born 34 weeks gestation, second twin; feeding problems as infant; parents perseverating on child's feedings; restricted child's food intake - improved after nutritional counselling.
		M (1yr)	Born 34 weeks gestation, first twin; mother did not restrict food as in twin sister - normal growth.
	F, AN	M (7yrs)	Born 36 weeks gestation, low weight, inadequate weight gain in infancy; mother reported "greedy eater" between 4 and 6 years of age so mother restricted food intake; seen at 7 years short and thin, growth improved since hospital involvement; parents do not eat with children.
		F (9.5yrs)	40 weeks gestation, normal weight; Decline in growth curve between 5th and 9th years; catch-up growth since hospital involvement.
	F, AN	F (9yrs)	Normal birth weight; seen at 3 yrs severely underweight; mother showed disgust of food and tried to prevent normal food intake of daughter.
		M (13yrs) M (17yrs)	2 brothers, normal birth weights; referred to hospital in 1981 due to retarded growth since their 2nd year. Showed endocrinological abnormalities. Parents showed much resistance to discussion of emotional deprivation as cause of their retarded growth.
		F (19yrs)	Normal birth weight; never referred to hospital but growth curve showed low weight for height from age 2 years; currently still short and thin, menarche still not occurred.
Woodside & Shekter-Wolfson (1990)	F, AN	M (12yrs) F (8yrs)	Separated, custody dispute; daughter very involved in mothers illness.
	F, BN	F (33yrs) M (30yrs) F (27yrs) M (20yrs)	Married; multi-generational enmeshment; youngest daughter has AN.
	F, BN	M (15yrs) M (13yrs)	Divorced; felt eating disorder interfered too much with ability to parent; gave custody to father, moved away; has not seen children for 4 years.
	M, AN	F (2yrs)	Marital problems; unable to sit at table, or eat with daughter. Daughter a fussy eater.
	M, BN	F (12yrs) F (4yrs)	Marital problems; eldest daughter cooks for father, she also began dieting in response to her father beginning treatment.
	F, AN	F (12yrs) M (8yrs)	Marital problems; wears 12 year-old daughters clothes.
	F, AN&BN	M, F (18yrs-twins)	Divorced; abandoned children to father; no contact last 14 years
	F, AN&BN	F (8yrs)	Married; Left child in fathers care for 1 year; disconnected from child.
	F, BN	M (12yrs) M (8yrs)	Divorced; Grandparents major childcare providers; unable to cook for children.
	F, AN&BN	M (15yrs)	Divorced; son severely mentally retarded; mother believes she has been over-involved.
	F, AN&BN	M (16yrs) M (12yrs) F (10yrs)	Marital problems; daughter attempting to police mothers eating.
	F, BN	F (25yrs) F (23yrs) F (16yrs)	Divorced; one daughter with BN; mother unable to eat in front of children.

Appendix A continues.....

APPENDIX A continues

GROUP STUDIES

Authors	Subjects	Measures	Results
Brinch, Isager, & Tolstrup (1988)	Follow-up study of clinical women with former diagnosis of AN (n=50) who had given birth to 86 children	Interview	7 children had died within the first week of life, one still born, one with hydrocephalus, five were premature; this was a rate of perinatal mortality six time the expected rate. A rate of 14% of underweight babies compared to background population rate of 6.8%. 84% of mothers breastfed for an average duration of 15 weeks, similar rate to the background population, almost all women had a positive attitude toward breast feeding before the delivery. 6 of the 75 children followed up had had eating and weight problems for some period beyond their first year of life. 17% of all children experienced failure to thrive in first year of life. One child had developed AN at 13 years old and had died at 15-years-old.
Evans & le Grange (1995)	Clinical mothers with an eating disorder (n=10) and their children (n=18; mean age 8.98yrs) Nonclinical volunteer mothers (n=10) and their children (n=20, mean age 7.8yrs)	Demographic details questionnaire; Eating Attitudes Test; Body Shape Questionnaire; Figure drawing scales, one for adults and one for children; Semi-structured interview on child's development and feeding.	Figure Drawings - no differences between current and ideal in mother's or children's ratings of themselves, or between mother's ratings of their children. Strong correlation between mother's satisfaction with her own body size and her children's satisfaction with their own size. This relationship was stronger in the clinical group. 13 of 16 clinical infants breastfed (2 adopted) compared with 18 of 20 in control group; however more clinical mothers reported problems with breast feeding, and more stuck to rigid feeding guidelines. 4 clinical children compared with 1 control child described as fussy eaters. Clinical group mothers reported more emotional problems in relation to feeding their children such as guilt when child would not eat, distress and conflict concerning role as cook and food provider. 9 of the 18 clinical children described by mothers as displaying various behaviour difficulties including hyperactivity, insecure attachment, enuresis, depression, alcohol abuse, oppositional behaviour. Only 2 control mothers reported such problems in their children.

Appendix A continues ...

APPENDIX A continues

Authors	Subjects	Measures	Results
Lacey & Smith (1987)	F (n=20), BN, pre-treatment	Psychiatric, obstetric, and gynaecological history taken; Questionnaire regarding all stages of pregnancy, and early infant life.	The number of women who were binge-eating and vomiting reduced in each trimester of pregnancy but increased again in the puerperium. Of 2 babies born one died shortly after birth due to prematurity, mother also abused drugs and alcohol. All other were normal weight, there were two sets of twins, one baby had a cleft palate, one a cleft lip, nine women had hypertensin during the pregnancy or in delivery, eight deliveries were breech, four were delivered by forceps and three were by caesarean section. 11 (55%) believed the presence of the baby inhibited binge eating, 7 (35%) reported ignoring their children while vomiting. All babies breast-fed either wholly or in combination with bottle-feeding, but the majority had problems, and hence 13 partially bottle fed. All children had grown satisfactorily, 3 mothers reported "slimming" down their babies, and 12 reported fears their children would be overweight. Four mothers reported trying to avoid giving their children carbohydrate foods and five prevented their child from having sweets. Three mothers thought their children were "faddy eaters", and seven reported uncooperative behaviour at mealtimes.
Stein, Woolley, Cooper, & Fairburn (1994)	Nonclinical (n=27) and clinical (n=7) mothers with ED; and their children (aged 12-14 months) Control mothers (24) and their children.	Eating Disorders Examination; Symptom Check List; Mother and child interactions observed during one play session and one mealtime; measurements of child's growth; Bayley Scales of infant development.	Videotapes: Negative expressed emotion more common during mealtimes but not play for index mothers. Index mothers found to be more intrusive and less facilitating during both mealtime and play; were more likely to express controlling statements during play. More conflict present during both mealtime and play. Index infants were rated as less happy during both mealtime and play. Index children tended to be lighter than control group, but birth weights similar. No differences in the developmental assessments of the two groups of children
Treasure & Russell (1988)	F (n=6), AN	Foetus growth assessed during third trimester of pregnancy; growth recorded during infancy.	Average weight gain 8kg Rate of growth of the abdominal circumference of the five foetuses was diminished during the last trimester, and the abdominal circumference of all seven was below the third centile at birth. Accelerated growth was seen in all seven during the first few months of birth. Five of the six women had difficulties breast feeding.

Abbreviations.
F, female; M, male;n, numberAN, anorexia nervosa (RAN, restrictory type; BAN, binger type); BN, normal weight bulimia nervosa, no history of AN; BN/AN, Full criteria for both AN and BN; BN/history AN: Bulimic patients with a history of anorexia nervosa; ED: combined Eating Disoders.

APPENDIX B

University of Canterbury
Department of Psychology

INFORMATION SHEET

Exploring mothers concerns about their toddlers eating and development.

The aim of this study is to explore your concerns about your toddler. It is interested in toddlers aged 1 to 3 years, and you have been identified as having a toddler born between 1.6.95 and 1.9.92. Please read this information sheet to decide if you and your toddler would be willing to take part in this study.

What is this study about?

Many mothers are concerned with what their children eat, and how they are developing. This study is designed to look at your concerns about your child.
The main aim of this study is to gather information about aspects of your child's development, what your child is currently eating, and what he or she does at mealtimes. It will also look at your child's "temperament", or those aspects of your child's developing personality that are inherited. Finally you will be briefly asked how you are currently feeling about your eating and yourself.

What will we ask you to do?

There are three parts to this study.

Questionnaires: You will be invited to complete three questionnaires. One is a temperament questionnaire asking you to rate your child's current behaviour. The other is a general questionnaire with sections pertaining to your child's development, your attitudes toward nutrition for children, and your thoughts about your child's body size and attractiveness. You will also be asked to complete a questionnaire about how you feel about your eating and yourself.
These questionnaires will take around an hour for you to complete, and apart from two sections of the general questionnaire which will be completed by interview, are all 'pen and paper' questionnaires.

Food Diary: We will also ask you to complete a food diary for three days. This will involve you making a brief note of everything your child eats or drinks for three days.
The food diary would take about half an hour in total over the three consecutive days, two of which need to be weekdays and one a weekend day. After an initial explanation about how to complete the diary you will be phoned by the researcher on each of the three days to answer any queries you may have regarding it.

Mealtime Observation: This part of the study involves a video-tape being made of you and your child during one lunch-time meal in your home.
The video needs to be running for 20 minutes of this mealtime.

In total these three parts will take two hours of your time, and involve two visits from the researcher. On the first of these visits you will complete the questionnaires and have the food diary explained. On the second visit the mealtime observation will take place.These visits will all take place in your home at times convenient to you.

APPENDIX B continues

Will I experience any harm or inconvenience?

The procedures used in this study have been approved by the Southern Regional Health Authority Ethics committee (Canterbury). Some mothers may find taking part to be stressful as they think about their children and their child's behaviour and eating. However most will find taking part in this research interesting.
If at any time you feel you need to talk to someone about your experiences during this study, Dr Bulik will be available.
All reasonable measures will be taken to ensure information collected as part of this study will remain confidential. No identifying names or details will be used when this study is published.

Can I change my mind about myself and my child being involved?

Your consent for both your own and your child's participation will be asked before your involvement in this study begins. However, at any time during the study you may chose to withdraw from the study. Withdrawing from the study will not affect you or your child in any way.

Will I receive anything for participating in the study?

As a small token of appreciation you will receive $10 for your participation.

This study has received ethical approval from the Southern Regional Health Authority Ethics Committee (Canterbury).

This study has been reviewed and approved by the University of Canterbury Human Ethics Commitee.

If you agree to participate in this study, please complete and sign the attached consent form. Please send it back on the enclosed addressed envelop to:

Elizabeth Waugh
Department of Psychology,
University of Canterbury,
Christchurch.

If you have any questions please do not hesitate to call Elizabeth Waugh, phone 351 5114.

Thank you again for your help with this study.

Elizabeth Waugh (BA)
Researcher
Department of Psychology
University of Canterbury

Cynthia Bulik, PhD
Senior Lecturer
Department of Psychology
University of Canterbury

APPENDIX C

CONSENT FORM

Exploring mothers concerns about their toddlers eating and development.

Reason for the project: This study is designed to gather information about aspects of your child's development, what your child is currently eating, and what he or she does at mealtime. It will also look at your child's "temperament", and ask you about your eating and yourself.

Your tasks in this project: You will be asked to complete three questionaries about you and your child, to keep a food diary for your child for 3 days, and to have a lunchtime meal with your child video-taped. This will take up to two hours of your time.

Risks associated with participation: There are no obvious risks to you or your child associated with participation in this study. The researcher will be happy to discuss any problems or questions you may have arising from your participation. Alternatively you may contact Dr. Bulik (University of Canterbury).

Confidentiality: The information gained from this study is confidential. Only the reserachers and those involved in your treatment will know of your involvement. No identifying information about you or your child will be released to anyone else.

Voluntary participation: Your participation in this study is completely voluntary (your choice) and you can withdraw yourself and your child at any time or ask that your information not be used.

Time required: The three elements of this study will take up to two hours of your time. They will be completed in two visits to your home, the first to complete the questionnaire and explain the food diary, the second to video-tape a mealtime with you and your child.

Name of researcher: Elizabeth Waugh, BA. Ph 351 5114 (Home)

Name of supervisors: Cynthia M Bulik, PhD. Ph 364 2994

This study has received ethical approval from the Southern Regional Health Authority Ethics Committee (Canterbury).

This study has been reviewed and approved by the University of Canterbury Human Ethics Commitee.

Please tick

[ ] I have read and understood the description of the above project. On this basis I agree to participate as a subject in the project, and I also agree to have my child participate. I consent to the publication of the results of the project with the understanding that anonymity will be preserved. I understand that I may withdraw at any time from the project, including withdrawal of any infomration I have provided.

Your Name: .....

Your Child's Name: .....

Your Child's Date of Birth: .....

YOUR SIGNATURE: ..... DATE: .....

WITNESS (if present): ..... DATE: .....

RESEARCHER'S SIGNATURE: ..... DATE: .....

APPENDIX D

I.D. No.....

Exploring mothers' concerns about their toddlers' eating and development

QUESTIONNAIRE: Parts I and II - Interview

I. DEMOGRAPHIC INFORMATION

1. Mother's date of birth: .....

2. Child's date of birth (target child only): .....

3. Number of children in your family:
   full siblings: .....
   half siblings: .....
   stepsiblings: .....

4. Position of your child in your family

   1 2 3 4 other .....

5. Your ethnicity

   Pakeha .....

   Maori .....

   Pacific Islander .....

   Asian .....

   Other (please specify) .....

APPENDIX D continues

6. Your child's ethnicity (please tick as many as are appropriate)

Pakeha	.....
Maori	.....
Pacific Islander	.....
Asian	.....
Other (please specify)	.....

7. What is your present occupation? .....

8. What is the highest level of education you attained?

.....

9. What is your partner's occupation?

.....

10. What is the highest level of education he/she attained?

.....

APPENDIX D continues

II. DEVELOPMENT

(the child's Plunket Book will be needed to answer some of these questions)

11. How was your health during your pregnancy with your child?

Good .....

Fair .....

Poor .....

12. Did you smoke during your pregnancy with your child? No .....

Yes .....

If yes, approximately how many cigarettes per day? .....

13. How much alcohol did you consume during your pregnancy?

None .....

1-2 drinks per week .....

3-5 drinks per week .....

more than 6 drinks per week .....

14. How old were you when your child was born? .....

15. What was your child's birth weight? ..... lbs ..... oz

..... grams

16. What were your child's APGAR scores? at birth .....

at 5 mins .....

APPENDIX D continues

17. What was your child's weight and height at:

	weight	height
6 weeks	.....	.....
3 months	.....	.....
6 months	.....	.....
9 months	.....	.....
12 months	.....	.....
18 months	.....	.....
2 years	.....	.....
3 years	.....	.....

18. How did you start feeding your baby? bottle (formula) .....
breast .....
combination .....

19. If you bottle fed, why? (tick as many as applicable)

- preference; time; lifestyle; convenience.
- pain; cracked nipples; breast infections etc.
- returning to work.
- lack of support - partner, family.
- inadequate milk supply.
- unsettled baby; colic.
- other, please specify.

.....

20. If you breast fed, for how long? .....

APPENDIX D continues

21. Did your child experience any health problems in his/her first 12 months (illness or accident)?

Yes ..... No .....

If yes, please specify .....

.....

.....

22. At what age did your child sit up?

3 - 6 months .....

7 - 12 months .....

over 12 months .....

23. At what age did your child crawl?

6 - 12 months .....

13 - 18 months .....

over 18 months .....

hasn't yet crawled .....

24. At what age did your child walk?

under 12 months .....

12 - 18 months .....

18 months - 2 yrs .....

2 - 3 years .....

hasn't yet walked .....

APPENDIX D continues

25. At what age did your child speak single words (other than "mama" or "dada"?)

9 - 13 mths .....

14 - 18 mths .....

19 - 24 mths .....

25 - 36 mths .....

hasn't yet said a single word .....

22. Have any of the following stressful events occurred within the last 12 months?

child accident or illness .....

family accident or illness .....

death in family .....

parent changed job .....

started/changed daycare .....

other (please specify) .....

.....

APPENDIX E

EDI

David M. Garner, Ph.D.
Marion P. Olmsted, M. A.
Janet Polivy, Ph.D.

ID No: _____ Date: _____

Age: _____

Present weight _____ Height _____

Highest past weight (excluding pregnancy) _____(lbs/kgs)

How long ago? _____ (months)

How long did you weigh this amount? _____ (months)

Lowest past adult weight _____(lbs/kgs)

How long ago? _____ (months)

How long did you weigh this weight? _____ (months)

What do you consider your ideal weight ? _____

Age at which weight problems began (if any) _____

INSTRUCTIONS

This is a scale which measures a variety of attitudes, feelings and behaviors. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and tick the box under the column which applies best to you. Please answer each question *very* carefully. Thank you.

		Always	Usually	Often	Sometimes	Rarely	Never
1.	I eat sweets and carbohydrates without feeling nervous.	☐	☐	☐	☐	☐	☐
2.	I think that my stomach is too big	☐	☐	☐	☐	☐	☐
3.	I eat when I am upset.	☐	☐	☐	☐	☐	☐
4.	I stuff myself with food.	☐	☐	☐	☐	☐	☐
5.	I think about dieting.	☐	☐	☐	☐	☐	☐
6.	I think that my thighs are too large.	☐	☐	☐	☐	☐	☐
7.	I feel extremely guilty about overeating.	☐	☐	☐	☐	☐	☐
8.	I think that my stomach is just the right size.	☐	☐	☐	☐	☐	☐
9.	I am terrified of gaining weight.	☐	☐	☐	☐	☐	☐
10.	I feel satisfied with the shape of my body.	☐	☐	☐	☐	☐	☐
11.	I exaggerate or magnify the importance of weight.	☐	☐	☐	☐	☐	☐
12.	I have gone on eating binges where I have felt that I could not stop.	☐	☐	☐	☐	☐	☐
13.	I like the shape of my buttocks.	☐	☐	☐	☐	☐	☐
14.	I am preoccupied with the desire to be thinner.	☐	☐	☐	☐	☐	☐
15.	I think about bingeing (over-eating).	☐	☐	☐	☐	☐	☐
16.	I think that my hips are too big.	☐	☐	☐	☐	☐	☐
17.	I eat moderately in front of others and stuff myself when they're gone.	☐	☐	☐	☐	☐	☐
18.	If I gain a pound, I worry that I will keep gaining.	☐	☐	☐	☐	☐	☐

APPENDIX E continues

19.	I have the thought of trying to vomit in order to lose weight.	❒	❒	❒	❒	❒	❒
20.	I think that my thighs are just the right size.	❒	❒	❒	❒	❒	❒
21.	I think that my buttocks are too large.	❒	❒	❒	❒	❒	❒
22.	I eat or drink in secrecy.	❒	❒	❒	❒	❒	❒
23.	I think that my hips are just the right size.	❒	❒	❒	❒	❒	❒

DT	B	BD	I	P	ID	IA	MF

Toddler Temperament Scale

(for 1 to 3 year old children)

by

William Fullard, Ph.D., Sean C. McDevitt, Ph.D. and William B. Carey, M.D.

Data Sheet

Mother's Id No: .....

Date of Child's Birth ..... Present Age .....
(month) (day) (year)

Date of Rating .....
(month) (day) (year)

Rating Information

1. Please base your rating on the child's recent and current behaviour (the last four to six weeks).

2. Consider only your own impressions and observations of the child.

3. Rate each question independently. Do not purposely attempt to present a consistent picture of the child.

4. Use extreme ratings where appropriate. Avoid rating only near the middle of the scale.

5. Rate each item quickly. If you cannot decide, skip the item and come back to it later.

6. Rate every item. Circle the number of any item that you are unable to answer due to lack of information or any item that does not apply to your child.

APPENDIX F continues

Using the scale shown below, please mark an "x" in the space that tells how often the child's recent and current behaviour has been like the behaviour described by each item.

Almost never 1	**Rarely** 2	**Usually does not** 3	**Usually does** 4	**Frequently** 5	**Almost always** 6

1. The child gets sleepy at about the same time each evening (within 1/2 hour),

almost never 1 2 3 4 5 6 almost always

2. The child fidgets during quiet activities (story telling, looking at pictures).

almost never 1 2 3 4 5 6 almost always

3. The child takes feedings quietly with mild expression of likes and dislikes.

almost never 1 2 3 4 5 6 almost always

4. The child is pleasant (smiles, laughs) when first arriving in unfamiliar places.

almost never 1 2 3 4 5 6 almost always

5. A child's initial reaction to seeing the doctor is acceptance.

almost never 1 2 3 4 5 6 almost always

6. The child pays attention to game with parent for only a minute or so.

almost never 1 2 3 4 5 6 almost always

7. The child's bowel movements come at different times from day to day (over one hour difference).

almost never 1 2 3 4 5 6 almost always

8. The child is fussy on waking up (frowns, complains, cries).

almost never 1 2 3 4 5 6 almost always

9. The child's initial reaction to a new baby sitter is rejection (crying, clinging to mother etc.)

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

10. The child reacts to a disliked food even if it is mixed with a preferred one.

almost never 1 2 3 4 5 6 almost always

11. The child accepts delays (for several minutes) for desired objects or activities (snacks, treats, gifts).

almost never 1 2 3 4 5 6 almost always

12. The child moves little (stays still) when being dressed.

almost never 1 2 3 4 5 6 almost always

13. The child continues an activity in spite of noises in the same room.

almost never 1 2 3 4 5 6 almost always

14. The child shows strong reactions (cries, stamps feet) to failure.

almost never 1 2 3 4 5 6 almost always

15. The child plays continuously for more than 10 minutes at a time with a favourite toy.

almost never 1 2 3 4 5 6 almost always

16. The child ignores the temperature of food, whether hold or cold.

almost never 1 2 3 4 5 6 almost always

17. The child varies from day to day in wanting a bottle or snack before bedtime at night.

almost never 1 2 3 4 5 6 almost always

18. The child sits still while waiting for food.

almost never 1 2 3 4 5 6 almost always

19. The child is easily excited by praise (laughs, yells, jumps).

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

20. The child cries after a fall or bump.

almost never 1 2 3 4 5 6 almost always

21. The child approaches and plays with unfamiliar pets (small dogs, cats)

almost never 1 2 3 4 5 6 almost always

22. The child stops eating and looks up when a person walks by.

almost never 1 2 3 4 5 6 almost always

23. The child seems unaware of differences in taste of familiar liquids (type of milk, different juices).

almost never 1 2 3 4 5 6 almost always

24. The child moves about actively when he/she explores new places (runs, climbs or jumps).

almost never 1 2 3 4 5 6 almost always

25. The child fusses or whines when bottom cleaned after bowel movement.

almost never 1 2 3 4 5 6 almost always

26. The child smiles when played with by unfamiliar adults.

almost never 1 2 3 4 5 6 almost always

27. The child looks up from play when mother enters the room.

almost never 1 2 3 4 5 6 almost always

28. The child spends over an hour reading a book or looking at the pictures.

almost never 1 2 3 4 5 6 almost always

29. The child responds intensely (screams, yells) to frustration.

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

30. The child eats about the same amount of solid food at meals from day to day.

almost never 1 2 3 4 5 6 almost always

31. The child remains pleasant when hungry and waiting for food to be prepared.

almost never 1 2 3 4 5 6 almost always

32. The child allows face washing without protest (squirming, turning away).

almost never 1 2 3 4 5 6 almost always

33. The amount of milk or juice the child takes at mealtime is unpredictable from meal to meal (over 2 oz difference).

almost never 1 2 3 4 5 6 almost always

34. The child practises physical activities (climbing, jumping, pushing objects) for under 5 minutes.

almost never 1 2 3 4 5 6 almost always

35. The child vigorously resists additional food or milk when full (spits out, clamps mouth closed, bats at spoon, etc.)

almost never 1 2 3 4 5 6 almost always

36. The child plays actively (bangs, throws runs) with toys indoors.

almost never 1 2 3 4 5 6 almost always

37. The child ignores voices when playing with a favourite toy.

almost never 1 2 3 4 5 6 almost always

38. The child approaches (moves toward) new visitors at home.

almost never 1 2 3 4 5 6 almost always

39. The child plays outside on hot or cold days without seeming to notice differences in temperature.

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

40. The child continues playing with other children for under five minutes and then goes elsewhere.

almost never 1 2 3 4 5 6 almost always

41. The child continues to look at a picture book in spite of distracting noises (car horns, doorbell).

almost never 1 2 3 4 5 6 almost always

42. The child wants a snack at a different time each day (over one hour difference).

almost never 1 2 3 4 5 6 almost always

43. The child is pleasant (smiles) when put down for nap or at night.

almost never 1 2 3 4 5 6 almost always

44. The child takes several days to get used to (show usual behaviour) in new situations away from parent (playgroup, day care centre, sitter).

almost never 1 2 3 4 5 6 almost always

45. The child speaks (or vocalizes) right away to unfamiliar adults.

almost never 1 2 3 4 5 6 almost always

46. The child reacts strongly (cries or screams) when unable to complete a play activity.

almost never 1 2 3 4 5 6 almost always

47. The child enjoys games with running and jumping over games done sitting down.

almost never 1 2 3 4 5 6 almost always

48. The child notices wet clothing, and wants to be changed right away,

almost never 1 2 3 4 5 6 almost always

49. The child is fussy or moody throughout a cold or an intestinal virus.

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

50. The child ignores parent's first call while watching a favourite TV programme.

almost never 1 2 3 4 5 6 almost always

51. A child loses interest in a new toy or game within an hour.

almost never 1 2 3 4 5 6 almost always

52. The child runs to get where he/she wants to go.

almost never 1 2 3 4 5 6 almost always

53. For the first few minutes in a new place (store, home or vacation place) the child is wary (clings to mother, holds back).

almost never 1 2 3 4 5 6 almost always

54. The child takes daytime naps at differing times (over 1/2 hour difference) from day to day.

almost never 1 2 3 4 5 6 almost always

55. The child reacts mildly (frown or smile) when his/her play is interrupted by parent.

almost never 1 2 3 4 5 6 almost always

56. The child accepts being dressed and undressed without protest.

almost never 1 2 3 4 5 6 almost always

57. The child is outgoing with adult strangers outside the home.

almost never 1 2 3 4 5 6 almost always

58. The child runs ahead when walking with the parent.

almost never 1 2 3 4 5 6 almost always

59. The child's period of greatest physical activity comes at same time of day,

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

60. The child can be coaxed out of a forbidden activity.

almost never 1 2 3 4 5 6 almost always

61. The child stops play and watches when someone walks by.

almost never 1 2 3 4 5 6 almost always

62. The child goes back to the same activity after brief interruption (snack, trip to toilet).

almost never 1 2 3 4 5 6 almost always

63. The child laughs or smiles when meeting other children.

almost never 1 2 3 4 5 6 almost always

64. The child sits still while watching TV or listening to music.

almost never 1 2 3 4 5 6 almost always

65. The child will avoid repetition of misbehaviour if punished firmly once or twice.

almost never 1 2 3 4 5 6 almost always

66. The child continues to play with a toy in spite of sudden noises from outdoors (car horn, siren, etc.).

almost never 1 2 3 4 5 6 almost always

67. The child ignores dirt on himself/herself

almost never 1 2 3 4 5 6 almost always

68. The child's time of waking in the morning varies greatly (by 1 hour or more) from day to day.

almost never 1 2 3 4 5 6 almost always

69. The child has moody or "off" days when he/she is fussy all day.

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

70. The child reacts mildly (frown or smile) when another child takes his/her toy.

almost never 1 2 3 4 5 6 almost always

71. The child stays with a routine task, dressing, picking up toys) for 5 minutes or more.

almost never 1 2 3 4 5 6 almost always

72. The child stops eating and looks when he/she hears an unusual noise (telephone, doorbell).

almost never 1 2 3 4 5 6 almost always

73. The child sits still (moves little) during procedures like hair brushing or nail cutting.

almost never 1 2 3 4 5 6 almost always

74. The child shows much bodily movement (stomps, writhes, swings arms) when upset or crying.

almost never 1 2 3 4 5 6 almost always

75. The child is pleasant (smiles, laughs) during face washing.

almost never 1 2 3 4 5 6 almost always

76. The child's initial reaction at home to approach by strangers is acceptance (looks at, reaches out).

almost never 1 2 3 4 5 6 almost always

77. The child is hungry at dinner time.

almost never 1 2 3 4 5 6 almost always

78. The child continues to get into forbidden areas or objects in spite of parents' repeated warnings.

almost never 1 2 3 4 5 6 almost always

APPENDIX F continues

Almost never 1	**Rarely** 2	**Usually does not** 3	**Usually does** 4	**Frequently** 5	**Almost always** 6

79. The child stops to examine new objects thoroughly (5 minutes or more).

almost never 1 2 3 4 5 6 almost always

80. The child ignores odours (cooking, smoke, perfume) whether pleasant or not.

almost never 1 2 3 4 5 6 almost always

81. The child looks up from an activity when he/she hears the sounds of children playing.

almost never 1 2 3 4 5 6 almost always

82. The child falls asleep at about the same length of time after being put to bed.

almost never 1 2 3 4 5 6 almost always

83. The child greets babysitter loudly with much expression of feeling whether positive or negative.

almost never 1 2 3 4 5 6 almost always

84. The child is moody for more than a few minutes when corrected or disciplined.

almost never 1 2 3 4 5 6 almost always

85. The child sits still (little squirming) while travelling in car or stroller.

almost never 1 2 3 4 5 6 almost always

86. The child watches TV for under 10 minutes then turns to another activity.

almost never 1 2 3 4 5 6 almost always

87. The child is shy (turns away or clings to mother) on meeting another child for the first time.

almost never 1 2 3 4 5 6 almost always

88. The child is still wary of strangers after 15 minutes.

almost never 1 2 3 4 5 6 almost always

Almost never 1	Rarely 2	Usually does not 3	Usually does 4	Frequently 5	Almost always 6

89. The child frets or cries when first learning a new task (dressing self, picking up toys).

almost never 1 2 3 4 5 6 almost always

90. The child sits quietly in the bath.

almost never 1 2 3 4 5 6 almost always

91. The child practises a new skill (throwing) piling, drawing) for 10 minutes or more.

almost never 1 2 3 4 5 6 almost always

92. The child ignores differences in taste or consistency of familiar foods.

almost never 1 2 3 4 5 6 almost always

93. The child sleeps poorly (restless, wakeful) in new places for first 2 or 3 times.

almost never 1 2 3 4 5 6 almost always

94. Child is fearful of being put down in an unfamiliar place (supermarket cart, new stroller, playpen) with parent present.

almost never 1 2 3 4 5 6 almost always

95. The child frowns or complains when left to play by self.

almost never 1 2 3 4 5 6 almost always

96. The child accepts within 10 minutes (feels at home, at ease) new surroundings (home store, play area).

almost never 1 2 3 4 5 6 almost always

97. The child looks up from play when the telephone or doorbell rings.

almost never 1 2 3 4 5 6 almost always

Mother's general impressions of child's temperament

A. How would you describe your child's temperament in your own words?

B. In comparison with what you know of other children of the same age, how would you rate your child as to the following criteria? (Circle one)

i. Activity level - the amount of physical activity during sleep, feeding, play, dressing, etc.

(1) high
(2) medium
(3) low

ii. Regularity - of bodily functioning in sleep, hunger, bowel movements etc.

(1) fairly regular
(2) variable
(3) fairly irregular

iii. Adaptability to change in routine - the ease or difficulty with which initial response can be modified in socially desirable way.

(1) generally adaptable
(2) variable
(3) generally slow at adaptation

iv. Response to new situations - initial reaction to new stimuli, to food, people, places, toys, or procedures:

(1) approach
(2) variable
(3) withdrawal

v. Level of sensory threshold - the amount of external stimulation, such as sounds or changes in food or people, necessary to produce a response in the child.

(1) high threshold (much stimulation needed)
(2) medium
(3) low threshold (little stimulation)

vi. Intensity of response - the energy content of responses regardless of their quality.

(1) generally intense
(2) variable
(3) generally mild

vii. Positive or negative mood - amount of pleasant or unpleasant behaviour throughout day.

(1) generally positive
(2) variable
(3) generally negative

viii. Distractability - the effectiveness of external stimuli (sounds, toys, people, etc.) in interfering with ongoing behaviour.

(1) easily distractible
(2) variable
(3) non-distractible

ix. Persistence and attention span - duration of maintaining specific activities with or without external obstacles.

(1) persistant
(2) variable
(3) non-persistant

APPENDIX F continues

C. How has the child's temperament been a problem for you?

D. In general, temperament of child is:

(a) about average
(b) more difficult than average
(c) easier than average

APPENDIX G

IV. BODY SATISFACTION

Please circle the number that corresponds to the strength of your opinion.

1. Compared to other children the same age, do you think your child is:

much more physically attractive				much less physically attractive
1	2	3	4	5

2. How important is it to you that your child is physically attractive?

Extremely important				Not at all important
1	2	3	4	5

3. Have you ever tried to help your child change his or her appearance?

No .....

Yes (how?) .....

.....

4. Circle the figure that looks most like your child's actual size:

APPENDIX G continues

5. Circle the figure that depicts the size you would most like your child to be:

APPENDIX H

I.D. No.....

Exploring mothers' concerns about their toddlers' eating and development

QUESTIONNAIRE: Parts III and IV

I. NUTRITION

Please indicate how you feel about the following statements. After reading each sentence, could you please circle whether you:

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

Circle the one which best describes your first reaction to the statement.

.	I let my child choose whatever he/she wants for breakfast.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	I feel my child's nutrition now will be extremely important as she/he grows older.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	As long as my child does not pick the same thing constantly, I feel it is all right to let him/her select his/her own food.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	As long as my child is not sick, I guess I must be feeding her/him right.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	The type of food one eats is important, and one should not be careless about it.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	If I give my child vitamins, I don't need to be so concerned about my child's diet.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	Children are more likely to eat well if they select the meat for the meal.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	If my child says "let's have _____ for lunch", I feel that I should do so.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
.	I feel that if the child drinks milk, I don't have to worry about nutrition.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
0.	Because the children are fussy about what they eat, I feel it is necessary to let them pick what they want for meals.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

APPENDIX H continues

. I feel that as long as my child is gaining weight, I don't have to worry about her/his nutrition.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. I just don't have time to think much about nutrition.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. The type of food is not so important as long as my child eats.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. I believe a child should be allowed to choose what he/she wants for breakfast and lunch, even if it means a little more preparation for me.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. I am concerned about getting my child to eat "good foods" throughout the day.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. Children should be allowed to eat whatever they want.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. Young children don't grow correctly when they have improper diets.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. I do give children food or drink to stop them crying.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. I do give children food or drink if they wake at night.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My partner's attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My mother's attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My mother-in-law's attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My plunket nurse's attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My doctor's attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
. My friends attitudes to food affect what I give my children.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

APPENDIX I

INSTRUCTIONS FOR KEEPING A DIET RECORD

I.D. No:

RECORD SHEET

PLEASE READ THESE IMPORTANT INSTRUCTIONS CAREFULLY

- Please record ALL food and drinks consumed.
- Please record the food at the time of eating and NOT from memory at the end of the day.
- When your child has finished eating please record the amount of food remaining so as the quantity eaten can be estimated.
- You should include all meals and snacks, plus sweets, drinks (including water) etc.
- Remember to include any additions to foods already recorded such as: sauces, dressings or extras, e.g. gravy, salad dressings, stuffings, sugar, honey, syrups etc., butter or margarine (e.g. added to bread, crackers, vegetables).
- If your child did not eat a particular meal or snack, simply draw a line across the page at this point. This will show that he or she definitely did not eat anything.
- The food diary needs to be completed over three consecutive days, including one weekend day, and two week-days. You have two choices - Thursday, Friday and Saturday; or Sunday, Monday and Tuesday.

DESCRIBING FOOD AND DRINK - GUIDELINES

1. Please give details of the method of cooking all foods (e.g. fried, grilled, boiled, roasted, steamed, poached, stewed).

2. Give as many details as possible about the type of food that you eat, e.g. brand name of food where applicable (e.g. Miracle margarine):

   type of breakfast cereal (e.g. Weetbix)
   milk (e.g. whole milk or 'trim milk')
   cake or biscuit (e.g. fruit cake, wheatmeal biscuit)
   fruit (e.g. fresh, canned, dried, stewed)
   soft drink (e.g. regular or low calorie)

3. Name the type of cheese, fish or meat (e.g. cheddar, cod fillet, loin of pork).
   e.g. Eggs - are they fried, boiled, poached or scrambled?

APPENDIX I continues

Recording the amounts of foods your child eats

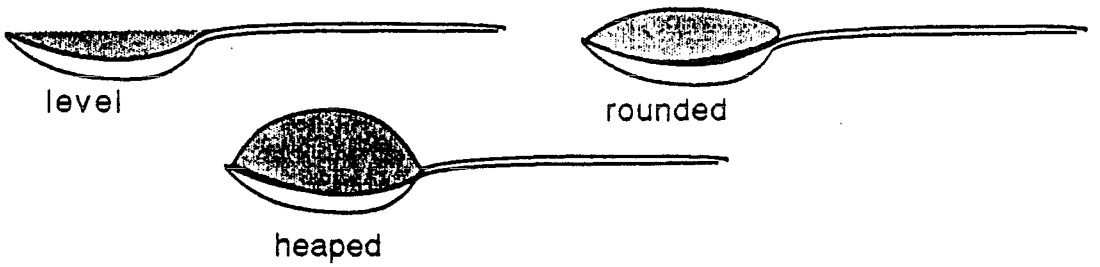
It is also very important to record the quantity of each food and drink your child consumes.

Here are some suggestions on how to record amounts:

. **In household measurements**

For many foods such as vegetables, cereal and canned or stewed fruit, a household measurement is adequate.

e.g. **State the number of teaspoons (t), tablespoons (T), cups** etc. State whether spoons are level, rounded or heaped.



Butter and margarine can be measured in teaspoons or tablespoons if you find this an easy method.

. **Weights marked on packages**

All convenience foods have their weight marked on the packaging and this can be quoted, e.g. a quarter of a 425g can of baked beans, .half a 50g bag of chips

. **Bread** - indicate the size of the slices (e.g. sandwich, medium, toaster).

. **Cheese, meat and fish**

If at all possible, it would be very helpful to weigh your child's portions of these foods.

If this is not possible, **please use the pictures on the attached sheets** to indicate what sort of portion sizes you eat, e.g. you might have 1 portion of spaghetti size A, 1 portion of meat size B or 2 slices of cheese size C.. These pictures are for adults however and you may need to estimate a smaller size still, e.g. half of portion A.

. Use **comparisons** for describing portion sizes where this is easier, e.g. potato - size of a hen's egg, cheese - size of a matchbox.

It is very important that you do not adjust what your child eats and drinks because you are keeping a record. This is very easy to do, but remember we are interested in your child's eating habits, not the perfect diet!!!!

APPENDIX I continues

Example of how to fill in Record Sheet

- Record ALL food and drink consumed during the day including sweets, snacks, nibbles, sauces and dressings.
- Please record: *method of cooking* (e.g. grilled chop)
  type of food (e.g. grain and honey bread)
  quantity of food (e.g. 6 heaped T of mince)

DAY 1 - Date .....

Meal/Snack	Quantity at Start of Meal	Details of Food and Drink	Quantity Remaining	Leave Blank
Early Morning	200 ml 1	blue (homogenised) milk superwine biscuit	60 ml nil	
Breakfast	1 & 1/2 1 1 heaped tsp 125 ml 200 ml 1/2 slice 1/2 tsp 1/2 tsp	weetbix medium banana brown raw sugar blue milk blue milk toast slice - wholemeal miracle margarine peanut butter	4 T 120 ml 2 x 2 cm sq	
During Morning	6 3 2 150 ml 1/2	potatoe chips, Bluebird plain mini donuts chocolate covered marshmallows orange & mango refresh medium apple	1 nil nil 30 ml nil	
Midday/Lunch	1 T 4 slices 3 florettes 3 florettes 1/2 1 tsp 1 average 2 T 1 T 1 T 1	white rice - boiled carrot broccoli cauliflower small tomatoe miracle margarine pork chop - 5 cm x 3 cm - grilled easyyo natural yoghurt stewed apricot (with sugar) icecream cone (cookie cone)	stir fryed 1/2 T 1 slice 1 florette 2 " " 1/4 - 2 pieces 1x1 cm each 1/2 T nil nil	
	100 ml	orange & mango refresh	20 ml	

APPENDIX J

MEALTIME OBSERVATION SCHEDULE

An Observer's Manual

1993

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and Karen M. T. Turner

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APPENDIX J continues

CONTENTS

APPENDIX J continues

I. INTRODUCTION

This manual provides guidelines for using the Mealtime Observation Schedule, a coding system used to record family interaction and child eating behaviour during video-taped mealtime observation sessions. The manual outlines the parent and child behaviour categories of interest, and provides common examples. Observers using the schedule are required to code parents' and children's verbal and non-verbal behaviour at mealtimes over a 20 minute observation divided into ten second intervals. Behaviour categories are scored for their presence in a particular interval, but not for the frequency of occurrence within an interval. Several categories may be coded during any interval, with the exception of codes which are mutually exclusive (these are noted in the behaviour category descriptions). Observers should be thoroughly familiar with the behaviour categories before conducting any data coding.

II. PARENT BEHAVIOUR CATEGORY DEFINITIONS

PRAISE (PR)

This category is scored for any non-aversive praise comment directed to the child. It may be a positive description of a specific behaviour or child characteristic, or a positive global reference to the child. Praise may be in the form of a statement or a question.

Examples: "What lovely manners."
"Aren't you eating well?"

CONTACT (CO+)

This category includes any physical contact deemed to be non-aversive i.e. not causing, or having the potential to cause pain or discomfort. The contact must be parent-initiated or parent-maintained.

Examples: Hugging, cuddling, caressing
Ruffling hair
Having the child on their lap
Putting an arm around the child's shoulders
Guiding the child's hands while cutting up food

Exclude: Child initiated contact not reciprocated by the parent (e.g. the child leans against the parent and the parent ignores).

AVERSIVE CONTACT (CO-)

As above, but where the contact causes, or has the potential to cause pain or discomfort to the child.

Examples: Smacking, slapping, prodding
Forcibly removing the child from the table in a rough manner
Accidentally bumping the child and causing pain
Squeezing the child's arm

SPECIFIC INSTRUCTION (SI+)

This category is scored for any direct verbal command that is clear, that has a specific behavioural referent (i.e. it is clear which behaviour or set of behaviours the child is expected to engage in), and that is presented non-aversively. The form of the instruction must be direct and clear, it must not be phrased in the form of a question, and it must be clear to the child that they are expected to comply with the instruction.

Examples: "Dinner's ready, come and sit at the table."
"Stop swinging on your chair."
"Look!" (as parent holds up or points to something)
"Leave that alone." (while removing a utensil from the child's hand. N.B. if the object to be left alone was not indicated to the child, this would be considered a vague instruction)

AVERSIVE SPECIFIC INSTRUCTION (SI–)
This code is scored for any verbal command that is clear, direct, that has a specific behavioural referent, but is presented aversively.

Examples: "I've already told you, come and sit at the table!" (yelled)
"Stop playing with your food like a baby!"

VAGUE INSTRUCTION (VI+)
This code includes any calmly presented verbal command that does not meet the criteria for a specific instruction. Vague instructions do not have a specific behavioural referent, that is, there is no description of the behaviour or set of behaviours the child is expected to engage in, or they are unclear or vague. Vague instructions are also often indirect or phrased as questions, making it unclear to the child whether the parent is requesting information or wanting the child to engage in a particular behaviour or set of behaviours. Questions which are coded as vague instructions have an implicit message for the child to comply with the instruction, that is they do more than merely ask for information from the child. In some instances the parent's actions (e.g. offering food while asking if the child would like to try it) or intonation (a question stated in a firm directive tone) may cause a judgement that an act of compliance with an EC or SA is intended.

Examples: "Come on, it's time for dinner."
"Why don't you try some carrot?"
"I think it would be a good idea if you ate some more of your sandwich."
"If you're not going to eat that I'll take it away."
"See if you can bite this crust."
"See the shapes in your spaghetti?" (implicit instruction for the child to look for the shapes)
"Don't you think you should sit down?"
"Johnnnn." (in a coaxing tone of voice)
"Are you going to eat some potato?"

Excludes: "Do you want to try some of this?"
"What would you like to try now?"
"Would you like some more?"
"Would you like to try peas or beans?"

These exemptions imply genuine choice for the child, ask for information, or imply no clear act of compliance (EC would be scored in this case).

AVERSIVE VAGUE INSTRUCTION (VI–)
This code is used for any verbal command that is unclear, that lacks a specific behavioural referent, and is presented aversively.

Examples: "Leave that alone!" (yelled)
"Don't!" (in an angry tone of voice)
"Johnnnn!" (in an annoyed or sarcastic tone of voice)

PROMPT (PT+)
This code includes any non-aversive instruction (either vague or specific) that is obeyed by the child i.e. the child complies immediately (within 10 seconds or so). If an instruction is coded as SI+ or VI+ in one interval, and the child complies in the next interval, the original code must be changed to PT+.

AVERSIVE PROMPT (PT-)
This category includes any instruction (either vague or specific) that is delivered aversively and is obeyed by the child i.e. the child complies immediately (within 10 seconds or so). If an instruction is coded as SI- or VI- in one interval, and the child complies in the next interval, the original code must be changed to PT-.

EATING COMMENT (EC+)
This code is scored for any general comment or question related to the current meal, or eating or food in general, that is presented non-aversively and cannot be coded as PR, PT+, SI+, or VI+. Eating comments phrased as questions differ from vague instructions phrased as questions in that they do not imply that the child should change their behaviour, they are more conversational and merely ask for information from the child.

Examples: "Yumm!"
"Do you want more yogurt or have you had enough?".
"Would you like to try some of this?"

AVERSIVE EATING COMMENT (EC-)
This code includes any comment or question related to the current meal, or eating or food in general, that is presented aversively and/or places a negative connotation on the meal or on eating in general, and that cannot be coded as PT-, SI-, or VI-.

Examples: "Yuck, what a mess!"
"This tastes horrible!"
"Why do my cakes never turn out right?"
"Sugar is bad for you."

PRESENTATION OF FOOD (PF)
This code incorporates any attempt by the parent to move food closer to the child to make it easier to reach, or to hold food to the child's mouth, or to add food to the child's plate, or to alter or prepare food on the child's plate. This category also includes placing a bottle in or near the child's mouth in the case of babies, but does not include drinks for children over one year of age.

Examples: Cutting up food on the child's plate
Scooping food onto a spoon for the child to pick up
Stabbing food with a fork and holding it up to the child's mouth
Placing food onto the child's plate
Pushing the plate closer to the child, within easy reach

REMOVAL OF FOOD (RF)
This category is scored for any instance of food being removed by the parent – out of the child's hands, or out of the proximity of the child. Again, not coded for drinks in the case of children over one year of age.

Examples: Removing the child's plate from their reach
Placing a spoonful of food back on the plate after offering it to the child
Holding out hand for child to spit unwanted food into

SOCIAL ATTENTION (SA+)
This code is scored for any non–aversive attention, verbal or non–verbal, that can not be scored under other categories (N.B. Neutral or ambiguous behaviours are coded as SA+). It may be parent initiated or in response to the child. This category may not be scored if any other positive behaviour is coded within the same interval, but may be scored in an interval in which negative behaviours have occurred (if the behaviours are separate).

Examples: Watching the child eat
Glancing at the child
Responding to the child's questions
Smiling and nodding at the child
"What did you kids do at school today?"
Engaging in general conversation with the child
Making a negative comment <u>then</u> winking at the child (SA– and SA+)

AVERSIVE SOCIAL ATTENTION (SA–)
This category includes any verbal or non–verbal attention which can not be scored under other categories, and which is deemed to be aversive due to negative content; or unpleasant, sarcastic or abrupt voice presentation; or negative physical behaviour (which is not negative physical contact). This category may not be scored if any other negative behaviour is coded within the same interval, but may be scored in an interval in which positive behaviours have occurred (if the behaviours are separate).

Examples: Looking at the child with contempt
Shaking head and clicking tongue at something the child has done
"What have you done now?" (in an irritated tone of voice)
"Trust you!" (in a sarcastic tone of voice)
"I said if you mucked up there'd be no dessert."
Praising the child <u>then</u> rolling the eyes (PR and SA–)

NO INTERACTION ( )
This code is scored for any interval where there is no interaction from the parent.

III. CHILD BEHAVIOUR CATEGORY DEFINITIONS

REQUEST FOR FOOD (RQ)
This category is scored for any verbal or non-verbal (e.g. gesturing) request for food.

Examples: "More please."
Pointing to or reaching for food

FOOD PREPARATION (FP)
This code includes any attempt to prepare food for eating.

Examples: Opening packages
Using utensils to prepare food (e.g. cutting up, scooping onto fork)

SELF BITE (SB)
This category records voluntary placement of food in the mouth, and taking a bite (N.B. food placed in the mouth and removed is coded as a vomit). It is only coded for unprompted bites, and is not scored if the bite occurs in response to an instruction, prompt, or physical offer of food to the child by another. This may be recorded as a tally of the number of bites rather than the presence of biting within the interval.

PROMPTED BITE (PB)
This category records the placement of food in the mouth, and taking a bite, following a verbal or non-verbal instruction, prompt, or physical offer of food or utensils to the child by another which indicates an explicit command to commence eating (N.B. food placed in the mouth and removed is coded as a vomit). The first prompted bite is scored PB, but if subsequent independent bites occur these are scored SB. An attempt to prepare food or start putting food to the mouth must occur within 5 seconds of a prompt to be coded PB. This may be recorded as a tally of the number of bites rather than the presence of biting within the interval.

Examples: Bites following:
Scooping food onto a fork and presenting to the child
Putting utensils close to or in the child's hand
Pointing at food
Tapping the plate
"See, this pizza is yummy"

PB would <u>not</u> be scored if the bite occurred following an eating comment (e.g. "Yum, this tastes great!"), as this implies no command to start eating, in this case SB would be scored.

CHEW (CH)
This category refers to any action moving food around in the mouth, grinding it between the teeth.

FOOD REFUSAL (FR)
This code refers to any action refusing an offer of food or instruction to eat by the parent.

Examples: Shaking the head
Pushing food away
Saying "no"

VOMIT (VO)
This category includes any time food which has been in the mouth comes out again. This does not necessarily have to be vomiting as such, the child may simply drop food out of their mouth, or spit it back onto the plate.

PLAYING WITH FOOD (PL)
This code includes any non-constructive use of utensils and/or food.

Examples: Pushing food from one side of the plate to the other
Playing with food as if it is a toy (e.g. pushing an apple round the table while making the sound of a car)
Fiddling with food
Tapping fork on the table

LEAVING THE TABLE (LT)
This code is scored for any time the child gets out of the chair, stands up, sits on the floor, or leaves the table. It is also coded for attempts to leave a high chair, even if the child is not successful. Continued absence from the table is scored LT for each interval away from the table. This code is usually considered an aversive behaviour, unless it occurs in response to a parental instruction (e.g. "Go and wash your hands", "Go and sit on the quiet time chair"), or occurs once the end of the meal has been signified (e.g. "If you've finished you can get down and play") in which case the behaviour would be coded as engaged activity (EA or AV). If the behaviour is in opposition to a parental instruction, however, the child will also be coded for non-compliance.

HOLDING FOOD (HF)
This code is scored if the child holds food in their hand without biting or chewing for the entire interval (N.B. even if the child is talking at the same time, this is not coded as appropriate interaction if food is being held). If the parent has given an instruction for the child to put the food in their mouth, the child may also be coded as non-compliant.

NON-COMPLIANCE (NC)
This code is scored for disobedience or refusal to initiate compliance (within 5 seconds) with a specific or vague instruction given by parents or other adults. NC continues to be scored for each subsequent interval in which the child fails to comply with the instruction until either a new instruction is given or the setting changes. For instance, a parent may instruct the child to put their fork on the table when they are not using it, if the child continues to play with the fork NC is scored for this interval and every subsequent

interval until the child puts the fork down (compliance); or is told to go to the quiet time chair for one minute (new instruction which precludes compliance); or the parent removes the fork from the child (change of setting, and the child is no longer able to comply with the original instruction). Non-compliance may occur some time after the original instruction was given. This is the case when a child is asked not to touch something and then touches it two minutes later. In this case the child would be scored for NC even though there was no immediately preceding instruction.

Examples: Continuing to swing on a chair after being told not to
Ignoring parents' instructions to turn off the TV and come to the table for dinner
Asking for more salt on the meal, being told "no" by a parent, and then reaching for the salt regardless

COMPLAINT (CP)
This category refers to any verbal complaint. Complaints may also be simultaneously scored as non-compliance if they violate an instruction, and/or physical negative if the physical behaviour meets the criteria.

Examples: Whining or grizzling
Screaming
Vocal protests (e.g. "Yuck, I hate peas!")
Displays of temper

Excludes: Aversive demands

AVERSIVE DEMAND (AD)
Any instruction, command, or demand directed to another person, and that is judged to be aversive or unpleasant, is coded AD. This is the equivalent of a complaint but has an instructional component. The demand may be considered aversive because of the actual verbal content (i.e relating to an unpleasant act, or implying threat without a physical demonstration), the tone of voice used, and/or the aggressiveness of the child; and must refer to a specific act of compliance the child would like the other person to engage in.

Examples: "Fix my dinner now!"
"Take it away!"
"Mum you have to help me!" (in a demanding tone)
"Let me out of this chair." (in a whining tone)

PHYSICAL NEGATIVE (PN)
This category refers to any actual or threatened physical attack or damage to another person, or destruction of an object.

Examples: Punching, hitting
Kicking
Biting
Scratching, pinching

Throwing an object at another person
Throwing or trying to damage an object
"I'll get you!"

OPPOSITIONAL BEHAVIOUR (OP)
This category includes all other inappropriate child behaviours which can not be readily be coded as NC, CP, AD, PN, or N. This code is scored when a child demonstrates behaviour which is socially unacceptable or inappropriate, such as violating social or family rules, even though a direct instruction may not have been given by the parent. The coder must consider the age of the child and decide whether the behaviour is age appropriate or not. If a parent gives an instruction to terminate an oppositional or socially inappropriate behaviour (e.g. tipping drink on the floor) and the child continues with the behaviour, then the child's behaviour would no longer be considered oppositional, it would be coded non-compliant instead. A single behaviour may not be coded as both NC and OP.

Examples: Standing on the furniture
Throwing food
Teasing, humiliating, embarrassing someone else
Deliberately ignoring or not answering a question
Pulling faces (at another person or at the camera)
Picking nose
Sitting with legs up or feet on the chair while at the table
Talking with a mouth full of food
Swearing at another
Hitting feet against table leg
Using fingers if not finger food

APPROPRIATE VERBAL INTERACTION (AV)
This code is scored for acceptable behaviour lasting the entire interval, which contains any intelligible / age appropriate speech or verbalisation. The vocalisation may be directed to parents, siblings, pets, or to self. This category is not scored if the child is coded for any other activity during the interval. This is an exclusive category.

Examples: "What's for dinner Mum?"
Involvement in conversation at the table
Asking questions
Non-aversive demands (e.g. "Can I have some milk please?")
Singing quietly while waiting for food to be placed on the table

ENGAGED ACTIVITY (EA)
This category is scored for acceptable behaviour lasting the entire interval, during which the child does not produce any intelligible / age appropriate verbalisation. This category is exclusive and may not be scored if any other behaviour is coded within the same interval.

Examples: Watching a parent prepare food and place it on the table
Listening to conversation at the table

Passing the salt when requested
Nodding head in response to a question (but saying nothing out loud)

NON-INTERACTION (NI)
This category is scored if there is an absence of interactions with objects or people, and/or for the occurrence of ritualistic manipulation of objects or repetitive self-stimulation for an entire interval. This category is exclusive and may not be scored if any other behaviour is coded within the same interval.

Examples: Staring blankly into space
Face slapping
Head banging

IV. BEHAVIOUR CATEGORY SUMMARY

PARENT CODES

PR	Any non-aversive praise offered to the child by the parent. It may be descriptive or global.
CO+	Any physical contact deemed to be non-aversive i.e. not causing, or having the potential to cause pain or discomfort to the child.
CO-	Any contact causing, or having the potential to cause pain or discomfort to the child.
SI+	Any verbal command that is clear and has a specific behavioural referent, and is presented non-aversively.
SI-	Any verbal command that is clear, has a specific behavioural referent, but is presented aversively.
VI+	Any verbal command that is unclear, lacks a specific behavioural referent, and is presented calmly.
VI-	Any verbal command that is unclear, lacks a specific behavioural referent, and is presented aversively.
PT+	Any positive specific or vague instruction which works i.e. the child complies (within 10 seconds or so).
PT-	Any aversive specific or vague instruction which works i.e. the child complies (within 10 seconds or so).
EC+	Any comment or question that is related to the current meal, and is presented non-aversively (e.g. "Yumm", "Do you want more yogurt or have you had enough?").
EC-	Any comment or question that is related to the current meal, and is presented aversively.
PF	Any attempt by the parent to move food closer to the child to make it easier to reach, or to hold food to the child's mouth (also a beta instruction). Not coded for drinks.
RF	Any instance of food being removed by the parent – out of the child's hands, or out of the proximity of the child. Again, not coded for drinks.
SA+	Any non-aversive attention, verbal or non-verbal, that cannot be scored under other categories. It may be parent initiated or in response to the child.
SA-	As above, except deemed to be aversive due to content or voice presentation.
	No interaction from the parent.

CHILD CODES

RQ	Any verbal or non-verbal (e.g. gesturing) request for food.
FP	Any attempt to prepare food for eating i.e opening packages, using utensils to prepare food (e.g. cutting up, scooping onto fork).
SB	Voluntary placement of food in the mouth, and taking a bite.
PB	Placement of food in the mouth, and taking a bite, in response to an instruction or physical presentation of food by another.
CH	Any action moving food around in the mouth, grinding it between the teeth.
FR	Any action refusing an offer of food or instruction to eat by the parent (e.g. shaking the head, pushing food away, saying "no").
VO	Any food which has been in the mouth and comes out again. This does not necessarily have to be "vomiting", the child may simply drop food out of their mouth, or spit it back onto the plate.
PL	Non-constructive use of utensils such as pushing food from one side of the plate to the other, playing with the food as if it is a toy (e.g. pushing an apple round the table while making the sound of a car), or fiddling with the food.
LT	Any time the child gets out of the chair, stands up, sits on the floor, or leaves the table. If the behaviour is in opposition to a parental instruction, the child will also be coded as non-compliance.
HF	Holding food in the hand without biting or chewing for the entire interval (N.B. even if the child is talking at the same time, this is not coded as appropriate interaction if food is being held).
NC	Refusal to initiate compliance with instructions within 5 seconds.
CP	Any verbal complaint (e.g. whining, screaming, grizzling, vocal protests, displays of temper). Excludes aversive demands.
AD	Any instruction directed to another person, that is judged to be aversive or unpleasant (e.g. "Fix my dinner now!").
PN	Any actual or threatened physical attack or damage to another person, or destruction of an object (e.g. punching, kicking, biting, scratching, pinching).
OP	Other inappropriate behaviours that cannot be coded as NC, CP, M-, PN, or N (e.g. violating family rules, teasing, deliberate ignoring, humiliating).
AV	Acceptable behaviour lasting the entire interval, containing any intelligible / age appropriate verbalisation (e.g. questions, non-aversive demands).
EA	Acceptable behaviour lasting the entire interval, not containing any intelligible / age appropriate verbalisation (e.g. listening to conversation at the table).
NI	Absence of interactions with objects or people, ritualistic manipulation of objects, repetitive self-stimulation (e.g. face slapping, head banging).

V. DISTRESSED AFFECT CATEGORY DEFINITIONS

There are three affect codes which may be scored for both child and parent. These codes are based on non-verbal behaviour, not on speech content. The codes are not mutually exclusive, that is, more than one affect code may be scored for an individual in the same interval. Affect codes may be scored in conjunction with other behaviour categories (e.g. complaint + anxious affect, physical negative + angry affect). However it is important to note that affect codes occur independently of the behaviour categories.

ANXIOUS (AX)

Anxious affect is scored for an interval where the observer detects a number of behaviours which indicate anxious mood. This may be a transient affect (present for only one or a few intervals) or a global mood state (present throughout most of the intervals). The table below lists behaviours divided into three categories: face, voice, and body posture. Anxious affect is scored if an individual displays a minimum of any two categories of depressed behaviour (e.g. one body and one voice behaviour – shaking hands, quivering voice). Anxious affect is not scored when only one category of depressed behaviour is evident (e.g. biting lip).

FACE	VOICE	BODY POSTURE
• grimacing • quivering lip • biting lip • expression of fear • creased forehead • raised eyebrows	• panting • sobbing • quivering • shuddering • wailing • breathlessness	• cowering • wringing hands • biting fingers • withdrawing • tense body / neck • moving hands/feet tensely • clenched hands • leaning / pulling body away

DEPRESSED (DP)

Depressed affect is scored for an interval when the observer detects a number of behaviours which indicate depressed mood. This may be a transient affect (present for only one or a few intervals) or a global mood state (present throughout most of the intervals). The table below lists behaviours divided into three categories: face, voice, and body posture. Depressed affect is scored if an individual displays a minimum of any two categories of depressed behaviour (e.g. one face and one body posture behaviour – downturned mouth, hanging head). Depressed affect is not scored when only one category of depressed behaviour is evident (e.g. eyes downturned).

FACE	VOICE	BODY POSTURE
• downcast eyes • lowering eyebrows • downturned mouth • face turned down • creased forehead	• change in pitch/volume (e.g. audible to quiet) • crying • mournful • morose • whining • lamenting • deep sighing	• orientation away • withdrawn • moving away and not facing others • hanging head • face cupped in hands • face resting on hands • body slumped

ANGRY (AN)

Angry or hostile affect is scored for an interval where the observer detects a number of behaviours which indicate angry or hostile mood. This may be a transient affect (present for only one or a few intervals) or a global mood state (present throughout most of the intervals). The table below lists behaviours divided into three categories: face, voice, and body posture. Angry affect is scored if an individual displays a minimum of any two categories of depressed behaviour (e.g. one face and one voice behaviour – sneering, accusing tone). Angry affect is not scored when only one category of depressed behaviour is evident (e.g. clenched hands).

FACE	VOICE	BODY POSTURE
• mocking • sneering • demonstrative looking away • expression of disgust • creased forehead	• change in pitch/volume (e.g. quiet to loud) • cold • tense • impatient • tough • piercing • staccato • accusing • sarcastic • outraged • screaming • scornful laugh	• tense body / neck • moving hands/feet tensely • clenched hands • abrupt and cutting off gesture (e.g. quick shrugging of shoulders) • passive aggression • blocking off • threatening arm position • harsh/rude gestures

NOTE Distressed affect codes are scored in the same column on the coding schedule, and are identified by notating the code abbreviation in the column. Each code will be totalled separately, and the total number of intervals with any distressed affect will also be scored.

APPENDIX J continues

VIII. SUMMARY SCORING PROCEDURE

PERCENTAGE OF INTERVALS BEHAVIOUR OCCURS

For parent to target child, parent to siblings, and target child behaviour categories calculate the percentage of intervals in which each behaviour occurs, by dividing the number of intervals the behaviour occurs by the total number of intervals coded and multiplying by 100.

PERCENTAGE OF INTERVALS OF POSITIVE VS AVERSIVE BEHAVIOUR

For parent to target child, parent to siblings, and target child behaviour categories, add up the number of intervals in which only positive behaviour occurs, and the number of intervals in which any aversive behaviour occurs (i.e. the occurrence of any aversive behaviour means that the interval is coded as aversive for that individual, regardless of the occurrence of positive behaviours in the same interval). Positive and aversive categories are outlined below.

POSITIVE PARENT BEHAVIOURS

(P) PRAISE
(C+) CONTACT
(SI+) SPECIFIC INSTRUCTION
(VI+) VAGUE INSTRUCTION
(PT+) PROMPT
(EC+) EATING COMMENT
(PF) PRESENTATION OF FOOD
(RF) REMOVAL OF FOOD
(S+) SOCIAL ATTENTION

AVERSIVE PARENT BEHAVIOURS

(C-) AVERSIVE CONTACT
(SI-) AVERSIVE SPECIFIC INSTRUCTION
(VI-) AVERSIVE VAGUE INSTRUCTION
(PT-) AVERSIVE PROMPT
(EC-) AVERSIVE EATING COMMENT
(S-) AVERSIVE SOCIAL ATTENTION

POSITIVE CHILD BEHAVIOURS

(RQ) REQUEST FOR FOOD
(FP) FOOD PREPARATION
(SB) SELF BITE
(PB) PROMPTED BITE
(CH) CHEW
(AV) APPROPRIATE VERBAL INTERACTION
(EA) ENGAGED ACTIVITY

AVERSIVE CHILD BEHAVIOURS

(FR) FOOD REFUSAL
(VO) VOMIT
(PL) PLAYING WITH FOOD
(LT) LEAVING THE TABLE
(HF) HOLDING FOOD
(NC) NON-COMPLIANCE
(CP) COMPLAINT
(AD) AVERSIVE DEMAND
(PN) PHYSICAL NEGATIVE
(OP) OPPOSITIONAL BEHAVIOUR
(NI) NON-INTERACTION

Calculate the percentages by dividing the number of positive intervals by the number of intervals coded and multiply by 100. Repeat this process to calculate the percentage of aversive intervals. Note: for target child these two summary measures will be complementary (ie. should add up to 100%), however this is not the case for parents as intervals in which the parent is not interacting with the children are not scored as positive or aversive and are therefore not incorporated in these calculations.

PERCENTAGE OF INTERVALS OF DISTRESSED AFFECT

Four separate affect measures are to be scored for parent and child: the number of intervals each affect code is scored, and the total number of intervals containing any distressed affect (there may be more than one code scored in the same interval therefore this is not merely a sum of the three affect codes). Calculate the percentages by dividing the totals obtained by the number of intervals coded and multiply by 100.

BITE FREQUENCY

Total the number of bites (voluntary and prompted), divide by the total number of intervals coded for the child, and multiply by six to obtain the bite rate per minute.